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MEDICAL RESEARCH, ITS TRENDS AND PORTENTS*

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THIS paper deals with the problem of medical research in three ways, which are however not separated into distinct sections, but rather are more or less inseparably interlinked one with the others. The first is the position of medical research in the broad field of medicine; the second is the attitude of the medical practitioner and the medical administrator to research; the third is the relation between academic medicine, as it has for centuries been accepted in our universities, and the new offspring of its venerable parents, medical research.

It is necessary first to establish a clear picture of what is entailed in medical research in order that its problems of policy and ideals may be understood, so that proper consideration may be given to the difficulties of administration and costs, and in order that a fair assessment of its future potentialities may be made. To those who are or have been engaged in research work to any considerable degree a presentation of this background is unnecessary to appreciate the implications drawn later. But to most doctors in general practice, and even to many administrators, the vast scope and complexity, and even the costs involved, not to mention more subtle aspects such as the influence on standards and quality of medical training, are little understood and given insufficient thought.

COMPLEXITY OF RESEARCH

Even a cursory glance through any recent journal of experimental investigation demonstrates the first trend in medical research at large that I wish to mention, namely its complexity. There are few problems left in which it is now possible to conduct sound investigations with the simple equipment that proved satisfactory a generation ago. Such ground has, for the most part, been covered thoroughly. Present day research work entails for the most part, apparatus and facilities of types that sometimes make a Rube Goldberg cartoon look simple. Even the least complicated problems now require equipment that is in some ways relatively complex. Take for example the simple inductorium. This is a time-honoured instrument, sturdy and simple and inexpensive. But anyone who has checked its electrical output, not on the tongue (the old way) but on a cathode ray oscilloscope (the new way) will know that it is a most unreliable performer. The frequency and the intensity of its output vary from moment to moment. This may not seem very serious in much work, and probably is not, when used on a simple nerve muscle preparation for the most elementary demonstrations. But as soon as we have gone beyond the simple demonstration the deficiencies and weaknesses of the inductorium become important. So it has largely been replaced by electronic devices, using radio tubes, which permit the experimenter to control the output to a degree which more nearly imitates the normal activity of nervous tissue. A change in equipment even of such a limited type implies that someone connected with the problem has sufficient knowledge if not to build, at least to operate and service it, and to permit its use without introducing errors due to the human element. Physics, indeed a very special offspring of the broader field of physics, has entered the field of medical research, and the process of complication has begun.

I cite the above as perhaps the simplest possible example of the new tendency. Multiply this by 10 to the nth and the picture is actually more real. In many respects the situation is amazing and appalling. Like Topsy our science

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has "just growed", out of all recognition from the medical science of not so long ago, and I think the greatest growth has been in a technical sense.

But perhaps this enormous technical growth is no more an indication of the trend than the growth in the complexity of the problems themselves. The more we learn the less we know. So the medical scientist, as well as other scientists, attempts to attain more and more information, by wider and wider observations, simultaneously where possible, through the use of bigger, better, more accurate, and of course costlier apparatus. It is a vicious cycle. Step by step investigations have progressed from those that could be carried out by one man with perhaps a technical assistant, using equipment home-made with wire and pliers, to those terrifying investigations which engaged the attention of research workers during the war, on aviation problems and so on. The *efficient* conduction therefore of even such simple problems as I might attempt, today requires collateral aids of a very special type. The same is true throughout the whole of the field of modern medical research. Errors enough creep in even where such assistance is available. But additional errors have frequently occurred because special knowledge, techniques and equipment were not at the service of those who performed the work.

And as knowledge has accumulated by the use of the special equipment so technical procedures have had to be elaborated. One can cite the extraordinary skill with which neurosurgical experimentation is now carried out, not only the accurate recording of nerve fibre activity, but the recording of activity from special and discrete areas of brain and cord, the creation of acutely-placed lesions in the brain by electrical and chemical means. One can cite the remarkable techniques, first developed in animals, dealing with cardiac surgery, which have opened new vistas in the treatment of congenital heart lesions. If one gets into the sphere of the larger projects employing barracks of equipment and platoons of workers, one sees the full development of the tendency.

Many of the trends in physiological and medical research concern the type of work which is traditionally carried on by university staffs, who have in addition, teaching responsibilities. They are problems which for the most part require space, facilities, technical and professional assistance of a type that is or could be made available in departments of most medical schools. To be sure, the provision of such facilities and assistance has had to be arranged for over a period of years. But the costs involved have not been prohibitive to university budgets, at least to many of them. Indeed the desire to provide such extra services, and the actual implementation of them, are features which differentiate what might be called the progressive medical schools from the less progressive ones.

But during the last two decades, there has been a notable diversion from the traditional concept of research, in the setting up of various institutes and foundations, and separate departments of research in hospitals and in universities, which have minimal teaching responsibilities. It is true that several famous and authoritative institutes have existed for longer than this. But the trend has nevertheless progressed noticeably in the last 25 years. It would appear that it was necessitated, or at least was desirable, for the investigation of problems or projects beyond the traditional scope of the staff and facilities of departments in universities. The investigation of *projects* has become, if not the most voluminous, at least an exceedingly important aspect of progress in medical research. Looking at any journal preceding the last 25 years it was not common to find groups of workers, covering or attempting to encompass the manifold phases of a problem by co-ordinated team investigation, and pledged to carry such a project through for years if necessary. Large teamed research, with perhaps 10 or 20 or more co-ordinated investigations going on at once, organized even between centres geographically separated, is essentially a modern trend. This is one development which, from the magnitude of the work and the expenses involved, has made research in some fields "big business". No one can argue I think, that such a development is likely to work against rapid progress in medical knowledge. But there is a considerable danger that so much attention will be paid to the results obtained by this method that the traditional place and means of research in teaching universities will suffer, not only from the quick usefulness of the results obtained, but from the excessive publicity which may attach to such groups.

During the war the tremendous projects of the armed services brought the process to full

development, where not only the personnel of one service but all services, with their facilities, were co-ordinated, and co-ordinated internationally, and at the same time integrated with the work of civilian groups in institutes and universities. One may instance the results attained in the treatment of shock; immersion foot; the problems connected with high altitude flying, and the other problems connected with gravitational stress in flight; the studies of diet and weather, and so on. These, interestingly, were largely practical problems. The impression is that in many instances the solutions were obtained more or less by trial and error methods, and that often the fundamental physiological mechanisms involved were not solved.

On the other hand, out of one problem which was essentially practical, has come much, and more will follow, of fundamental importance. Knowledge of the biological implications of radiation effects which may be expected in the future offer new scope, and pose new problems for those engaged in medical research. The development of the atomic bomb has demonstrated thoroughly the practical benefits to be derived from the co-operative efforts of all branches of science. It has also shown the desirability of the continuation of such co-operation.

THE NEED FOR STATISTICAL ANALYSIS

The final trend that I wish to mention before discussing the implications of these developments is the widespread application of statistical analyses in research work. This is a phase of research not sufficiently considered, I believe, by individual research workers. There seems to be no doubt that statistical analyses would not only add greatly to the significance of much published work, but would disclose many fallacies, and render insignificant a great volume of reports now accepted for publication. On the other hand, it is essential that one should not become hide-bound in an adherence to such scientific methods of analysis, to the exclusion of the subtle and intuitive judgment and interpretation of certain types of experimental results. As in the practice of medicine, so in research there is an aspect which can be called an art, in which a lively imagination, a venturesome yet judicious approach and some degree of aggressiveness and real persistence can accomplish what a systematized assault may fail to do.

ORGANIZATION OF MEDICAL RESEARCH

I intend now to present points of view, and to discuss aspects of the organization of medical research which I believe will have to be confronted and dealt with in the future, indeed in the near future, as a result of the trends which have been so superficially surveyed. I am convinced that what has been said is, unlike most superficial and cursory presentations, not an exaggeration of the situation as it has developed, but an understatement of it. As a result I believe the implications for the future would better be viewed, not with apathy and a shrug of the shoulder but with an attempt comprehensively to assess what might be involved, and with a predisposition to emphasize the importance of these trends.

There seems to be no doubt that the art and science of medicine will increase in complexity rather than return to its earlier more simple status. I think it probable that this complexity will increase not only in the purely scientific aspects but also in its sociological, and consequently its administrative phases. As I see it, those who are concerned with research work and the other academic phases of medicine, those in whose hands in other words rests the progress of medical science, must be prepared to defend aggressively the right and the opportunity for freedom to work at such academic problems, without the encumbrances and restrictions of government policies or social ideologies, and without being hamstrung by administrative detail or budget inadequacy. I believe therefore that the first requisite if medical science is to maintain and improve its position is to adopt a sound attitude or policy toward the field of research. It is essential that the medical scientist should, shall I say, come out of his seclusion and get his hermit locks trimmed, and attempt to orient himself with more vitality in the general field of medical activity and social development. Lest anyone should be under a misapprehension that I am suggesting the adoption of trade union methods, or even that we should formalize excessively our attempts to establish more recognition, let me say as an out and out individualist that I do not subscribe to such ideas. I can think of no quicker way to raise a cry against ourselves of "closed corporation" or "opportunists" than by such means. Also, there is something about people who work in the realm

of ideas, which will not let them without some loss of their genius, submit to such regimentation. On the other hand the history of scientific effort in this country is proof of the fact that our material and human potentialities have neither been fully tapped nor most efficiently employed, at least in peace time, and could well be better integrated by the adoption of a more realistic attitude.

Perhaps the most valid argument that can be put forward to justify these statements is the large and continued exodus from the country of many of our most promising scientists. I believe the tendency is a reflexion, and this is an important point, not only of inadequate material opportunities to keep talent "at home", but more seriously a reflection of a lack of desire to keep them. Of the two deficiencies I believe the *attitude* toward academic endeavour is the more important. Given the right attitude, the material means will be obtainable.

How futile it is for us as scientists to sit obscurely in our offices and laboratories, remote from the current of non-professional activities, and privately grouse against our inadequate lot, and to criticize "the administration" for not more or less automatically setting up the facilities that we yearn for. If we fail to tell our story, and to tell it with punch, vitality and reason, it is no one's fault but our own if "the administration" fails to provide the means. No administration can be expected to invest in a commodity with which it is not only unfamiliar in a technical way, but of which it does not even know the existence. It is justified in asking not only how much it will cost, when we ask for something, but what good reasons for its provision can we put forward. And if we fail to make specific, logical, reasoned and forceful requests we can scarcely expect an administration to have the prescience to establish the necessary facilities automatically.

This is where I consider that our own approach to the field of research and our own orientation in the broader activities of society are vitally important. I have friends, for example, competent and clear-thinking men in their fields, who scorn the idea that we should publicize scientific and especially medical research. They believe that they should be left to work in seclusion, without any public accounting of their activities. This I call the "ivory tower" attitude. To that I reply: let the scientist in all conscience work in peace, and let there be no interference in his independence and no compulsion. But let us admit our responsibility to our fellow men, and as scientists accept the trait of curiosity and interest as an attribute not only of ourselves, but of our compatriots outside the profession. And if we do accept these facts, I believe we have to admit that it is natural that they should wonder what we are doing, especially since they foot the bill, as we would wonder ourselves, in their position. I feel therefore that before we can expect increased support in our work, either moral or financial, we must make our story known, by an open, reasonable, and within limits, aggressive approach to those for whom, in the end, we work.

What are the alternatives if we fail to make this a policy. The first is that our independence will assuredly in part at least be taken away, and we shall be told what we shall work at, under what conditions we shall work, and even with whom we shall work. In addition, those of us who also teach will be told how many students we shall take irrespective of the important matter of academic and professional standards, and we shall perhaps ultimately be dictated to as to the subject matter of our teaching and research. It requires little imagination to envisage the loss of prestige to the profession that would result, the appalling impediment to high standards of work, and the low level of salaries and personal respect that we should have to put up with. I wish to say that this picture is no far-fetched impossibility. It has been at work incipiently already.

The other alternative is one already too well established. The quest for information, the desire to "get the news" has led to the garbled, distorted, unauthentic, and frequently grossly erroneous public presentation of scientific subjects that has become popular in many picture and "close to pulp" magazines. Nothing better can be expected so long as the scientists themselves fail to write, or even edit public reports, but leave them to lay newsmen who are more concerned with dramatic appeal, often requiring distortion or misplaced emphasis, than with authenticity. Even the conscientious reporter has a difficult task to present a fair account of a subject of which he is ignorant.

I believe therefore that we require to undertake responsibility for the promulgation of information in our field, or at least to supervise,

oversee, or edit it. This could of course with justification be left to a few scientists of sound training and vision, whose activity as critics could be concerned with this phase of science instead of the active conduction of research work. Or as an alternative some such office might be included in the administrative organization of science faculties in universities, and in scientific societies.

RESEARCH IN THE UNIVERSITIES

I intend now to deal with the position of research and the research worker in universities. I believe that in the sciences the repetitive teaching of elementary courses, such as are given to university undergraduates, is a deadening and stultifying process. In the arts and humanities even undergraduate courses call for imagination, and allow a large element of personal interpretation and even a creative approach to the subjects. But in the sciences the basic rules and data cannot be much changed. There is little scope for imaginative interpretation, and initiative is frequently lost in short order. It is a rare genius indeed who can keep a vital interest in teaching when that is *all* he has to do. Even more likely is initiative and imagination to be lost when the personal rewards for such work are made so slender and insecure. The teacher has little moral encouragement from society in his efforts and inadequate material freedom to revivify himself by travel or the purchase of the amenities of life. Opportunity to carry on research work serves, as I know well, as a leaven, a diversion, and indeed an inspiration that offsets the deadening effect of routine and teaching duties. But it seems that there is often a failure among non-scientists to recognize the validity of such a subtle argument. It is true, lip service is given to the cause of research. But while on the one hand, a vague inducement is held out in the form of an expressed hope that we will carry on research work, on the other hand the burden of routine duties is slowly added to, and at the same time the pursestrings are drawn tight which might be loosened to distribute the means to implement the research hoped for. It will be disastrous if such an attitude continues. If it is not possible to eliminate it by means of steady and logical arguments of the type mentioned above, *viz.*, the dependence of the quality of teaching upon a broader plane of academic interests than undergraduate courses, and the involvement of standards of teaching in research work, then such arguments must be bolstered by the more direct and more forceful (to the public) thesis of the practical benefits to be obtained from research work. In this sense some enlightening statistics could certainly be compiled.

It is impossible accurately to foretell future trends in types of research problems. New developments in the fields of physics and chemistry continually open up new fields in the biological sciences. For example, the physiologist has what appears to be an almost limitless horizon in the field of radioactive substances, using them as tracers in the understanding of the actions of the body, (a use which has been somewhat pursued already); in their application in the development of new clinical tests for diagnosis; in the treatment of disease. When one thinks of the recent warning of J. B. S. Haldane concerning the dangers of atomic bombs affecting the genes of cells so that mutation forms may develop, a whole new vista in embryology is opened up. There is an almost equally vast field in the mass of new equipment which has been developed and which has potential medical application. In all such ruminations, it does however appear that much of the research of the future will entail the co-operation of two or three or more people, specially trained, even in the smaller problems. This type of co-operation is feasible in universities, provided there is not too great separation geographically between departments and provided there is the requisite understanding of the need for such co-operation.

RESEARCH IN MEDICINE

With regard to the organization of research work in the field of medicine in particular I have had a growing conviction that something more definite should be done to break down the barriers between what we call the clinical and the preclinical. This separation has led to a schism that is more than a term in some places. The general practitioner in medicine knows little of the aims and objectives and ideals of the academic man, and he calls his work impractical and of little use. On the other hand the academic group tends to scorn the practitioner as an ignoramus and empiricist, and no scientist, forgetting that he is the one who will ultimately utilize the scientific discoveries and that both are working in the

interest of humanity. I can see no justification for such parochialism. Indeed without the practitioner the scientist would have little reason to undertake most of his investigative problems. And without the scientist the practitioner would be in a poor position. In fact the present affluent and influential state of the medical practitioner is in no small measure due to the tools and knowledge that the scientist has placed in his hands. What a strange anomaly therefore that there should be anything but the most complete co-operation between them. The discord, I regret to say, starts in our universities during the training of medical students. What a student learns in the basic sciences is too often ridiculed, or treated with suspicion by the practitioner who trusts his "art" and his own experience more. I consider that much could be done to improve this situation by the institution of classes of a type where the opinions of both clinician and scientist are openly expressed before the students and a discussion carried on objectively, from both angles without personal bias or animosity. We have made some efforts to do this, enough to reach the conclusion that it would be profitable. We are confronted however with organizational difficulties, particularly in the matter of time-tables and staff, which could only be eliminated by a more comprehensive revision of our set-up than has been possible.

Finally one might ask what place there is for setting up separate departments of medical research, in which there should be a minimum of teaching or other routine duties. This is a trend which I think is desirable if certain conditions are fulfilled. Such departments serve a valuable purpose provided there is close liaison between them and the other departments of the faculty, both in a professional and administrative sense, and preferably also in a geographic sense. I feel that this provides a potentially effective means of creating the very co-operation between the clinical and preclinical which is now lacking. The most critical factor in the success of such a procedure undoubtedly lies in the personnel, and the personality of the department. Those engaged in such work should have sound training and experience in both clinical and scientific medicine. Obviously this entails extensive qualifications, and the salaries may have to be commensurate. In addition it requires a degree of tact and diplomacy that will permit co-operation with the many types of persons who constitute the most individualistic calling in the world. The establishment of such a department would provide means for the preclinical staff to assist or participate in problems which have a clinical aspect, and require a degree of organization among hospital staff and patients which they themselves could not arrange for. On the other hand, if such a research department is set up outside the medical faculty, or without close liaison with the other divisions of it, there is danger that it would become a lone wolf, and establish a third and separate class of interest, and lead to further sectionalism in the profession.

I see another trend occurring that affects the field of research which is, I think, not in the interest of efficiency or progress. In universities in particular, the tendency is to "make a staff appointment" rather than to "appoint a man to the staff". The difference is one of emphasis, the weight being laid on the position to be filled, rather than on the man who might fill the position. One might I think paraphrase Mr. Churchill, "Give us the men, and we will finish the job". Our universities are too full of staff members who are less useful than they might be. I believe that more of the spirit of recompense for services rendered, the key to efficient business operation, might correct this. Much of the failure among university staffs to continue to develop capabilities which showed early promise can be ascribed to a lack of that incentive based on the principle of proportionate returns. I am one who is at times suspicious of the *profit* motive. I doubt that monetary gain is as important as it is often made out. But the majority of young university staff have little returns indeed of any kind to spur them on. Financial gain is out of the picture. There is slight kudos attached to a teaching position in this day and age, as a mass of popular articles recently appearing has made clear. There is need therefore to establish some incentive which will induce university staffs to carry out research work, so that they can at least entertain a sense of professional accomplishment.

Of the aspects of research that I have dealt with I should like to revert to and elaborate that which concerns our attitude toward it. Wherever progress is rapid it is essential that we stand off on the side lines from time to time and have a look at what is going on. Sometimes

I think it would be profitable for the field of science to take a universal sabbatical year. This is impractical. But it is not impractical for us as individuals, or as a group, to look into the crystal, even if it turns out to be a mirror. What will it avail us to sit on our complaints and from them hatch a monstrous phobia. As university staffs, too many of us are dissatisfied in a grousing manner. Such an attitude will avail us little. Surely, with what has been accomplished by research workers, we have a strong enough case for constructive argument. But we cannot assume that everyone already appreciates such arguments. No shame or dubious motives can be attributed to us if we take up the arguments and wield them honestly and purposefully to constructive ends. Yet how many so-called academic people will take such a stand? In a day and age when blatancy is the keynote of almost all activities it will avail little to be a shrinking violet. Such blatancy will listen with interest *and respect* not to other blatancy, nor to reclusiveness or cringing, but to a forthright and insistent demonstration that in the vernacular ultimately puts it "on the spot". Changing times demand changing methods. We must assert the aims of the conscientious scientist in a general sense, by honest discussion of what has been done and what may be done. This is one way to combat the rumours and seditions that work against a more general recognition and acceptance of our purposes.

In the matter of moral support for medical research I believe we are justified in expecting greater assistance from those in the medical profession who are in practice. The arguments presented stressed the usefulness of research not only to society, but to the practitioner. But the very situations in which we work, our lack of contact with the public and with governing bodies which dictate the means, make it difficult to implement the program that seems to be needed. To have the backing of official medical organizations in our efforts to expand the scope of scientific medicine would be a real help.

Canada is an oddly paradoxical country. Though young, as a people we harbour a reactionary attitude that eschews a gamble in the world of ideas and feelings, yet we profess to be progressive. Endowed with potential and actual material wealth, we are idealogical mendicants. From the old world we have borrowed a mass of inhibitions and fears. From other parts of the new world we belatedly adopt a small percentage of what is new, sometimes without critical judgment, not always the best of the new. In few respects do we set a pace as a virile and imaginative youth might be expected to. It seems to me that those who have something to present, should do so, not with a complaint, but in the manner of the tragi-comic figure of Point in the *Yeomen of the Guard* with a simple and direct assertion, "I have a song to sing oh". There is need for boldness, for a readiness to overstep the mark to a degree if necessary, to take a chance on occasion, to take some losses with a shrug. We are, I think, as a group and as a people, too timid, too undemonstrative. We might with profit adopt the philosophy of Andrea del Sarto: "A man's reach must exceed his grasp, or what's a heaven for".

I am an optimist at heart, though I hope a critical and sceptical one, if there can be such a paradox. At any rate I know too many examples where pessimism and lack of progress coexist, whether as cause and effect or as mere associates I don't know. I suspect the former. It is perhaps significant also that optimism is usually a partner to success. Again, I feel that such optimism exists in more than a satellite rôle.

It is this spark of vitality which I think ultimately differentiates success from failure. I cannot help feeling that though we automatically think first of the practical aspects of research, the concrete means and methods, we overemphasize them. It is the human factor that counts most.

Sugar is a strong reducing agent particularly when inverted. It therefore holds a unique position in its ability to protect certain preparations such as ferrous sulfate, ferrous iodide, cupric sulfate, etc. from oxidation, thus assuring the physician that the medication, as prescribed, reaches the patient in the chemical form in which it is therapeutically active. Sugar is used for this purpose in many pharmaceutical products, especially those containing ferrous salts, in order to maintain them in the ferrous condition, for example, Blaud's Pills, Syrup Ferrous Iodide, Syrup Hydriodic Acid, etc.

HISTOLOGICAL LOCALIZATION OF RADIOACTIVE ELEMENTS*

(A Review)

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THE ability of radioactive rays to affect photographic emulsions was discovered before radioactivity itself was even known to exist. Besquerel[1] suspected this fact in 1895, when he found that a fragment of uranium ore left next to a photographic plate produced fogging of the plate. Following this chance observation, he placed a layer of crystalline uranium sulfate over a photographic plate wrapped in black paper. On development the plate showed the silhouette of the crystals. From this first autograph he concluded that uranium produced mysterious rays, active on photographic emulsions; and thus, natural radioactivity was recognized for the first time. Applying the same type of technique, it is possible to detect radioactive substances introduced into the body by placing the tissue under investigation on a photographic plate, the photographic image obtained being known as "histoautoradiograph", "radioautograph" or more simply "autograph".

Autographs were first attempted by London[15] and later by Kotzareff,[43] using organs of animals treated with radium. Lacassagne, in 1924, traced polonium by an improved photographic method enabling a more precise histological localization in various organs of the body. This fine tissular localization is the great advantage of the autographic method over the other methods of radioactivity measurement, *i.e.*, the Geiger counter and the electroscope. The disadvantage, on the other hand, is the lack of accurate measurements of radioactive intensities in the autographs; but modern progress in the densitometry of photographic plates may soon enable a quantitative measurement of the radioactivity, as detected by this procedure.

Since the pioneer work of Lacassagne, the autographic method has been used to investigate the behaviour in the body of the ions of lead, phosphorus, calcium, strontium and iodine; both natural and artificial radioelements having been used. At present, broad vistas lie ahead in the localization of these and other elements incorporated into various organic molecules of biological importance.

PROCEDURE

The method is essentially the same as that used by Becquerel. In detail it consists of injecting the material under investigation into an animal. After a period of time sufficient to allow the radioactive substance to distribute itself in the body, the animal is sacrificed and various tissues are excised for examination. These are then fixed, embedded in paraffin, and sectioned at 3 to 10 μ. The sections mounted on microscopic slides are coated with collodion and dried. The slides are then placed in contact with a photographic emulsion which may be a plate—such as the Eastman Medium Lantern slide—or a film, commonly an x-ray film. The film or slide is developed after an exposure, the length of which depends on the half-life* of the isotope used. The resulting photographic image or autograph may then be compared under the microscope with the tissue section on the slide. For full technical details the reader is referred to the papers of Lacassagne[6, 7, 10] and others.[5, 8, 9, 11] Many examples will be illustrated in which the autograph is presented next to a tissue section. The autograph is usually reproduced as a negative, that is as the reaction obtained on the emulsion (Figs. 3, 5, 79, 81), although in a few cases a positive image was prepared from the original negative image (Figs. 10, 12, 17, 54).

Recently, a simple modification which improved the definition possible by the technique, was worked out at McGill University.[9] The emulsion was removed from medium lantern slides, melted and spread directly on to the collodion-coated slides bearing the sections. These were left for a similar length of time as in the earlier methods, then developed and stained (see Figs. 43 to 46). This procedure results in slides containing the tissue section with dark silver granules overlying the areas

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* The half-life of a radioactive isotope is the time required for half the initial stock of atoms to decay. Thus, after the period of one half life has elapsed, the total activity would have fallen to ½ of its initial value; after 2 half-lives, the activity will be ¼ its original value and so on.

in which the radio-element was located. Very close contact between section and emulsion occurs, resulting in a considerable decrease of blurring. Efforts are continuing to find emulsions which may be handled in ordinary light and which will allow the staining of the underlying section by ordinary histological techniques*

MECHANISM INVOLVED

A photographic emulsion is a suspension of silver salt, commonly silver bromide, in a gelatin matrix. Light affects these particles making them susceptible to certain reducing agents (developers) which convert the light-affected particles of the silver salt into metallic silver. The rays given off by radioactive elements have an effect similar to that of light on the photographic emulsion. However, this effect differs markedly for each type of radiation, according to whether it consists of alpha (α) particles, beta (β) particles or gamma (γ) emission. Furthermore, the energy and penetrability of the radiation varies for each radioactive substance. For example, the range of α particles in gelatine varies around 0.05 mm.; that of β particles varies from 0.1 mm. for the softer particles to over 10 mm. for the more energetic particles; while γ emission, which is similar to x-rays, may pass through yards of gelatine. Rutherford[12] points out that the action of these rays on the photographic emulsion will depend on the extent of their absorption by the emulsion. Of the three types of rays, the α particles have the most localized action and individual particles have been shown to give a detectable photographic effect (Kinoshita[3]). The actions of the various radiations is shown graphically in Fig. 1 modified from Yagoda.[2]

If we consider each atom undergoing disintegration, as a dot, and surround it with a circle of a radius equal to the distance which its most penetrating particles will travel, the radius of the circle in the case of α particles will be very small, about 1/20 mm. (50 μ), in a photographic emulsion; the radius of the β particle range will be measured in millimetres and the range of the γ emission, in metres. Where these circles intersect the emulsion, the silver bromide granules will darken on development. Thus an atom emitting particles on the surface of the emulsion should give an affected emulsion area equal to the diameter of the

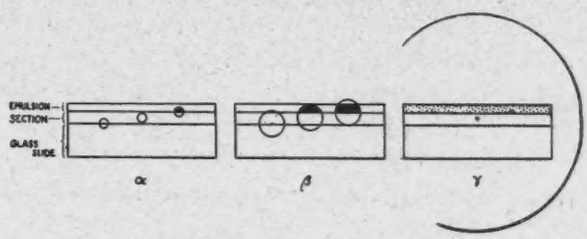


Fig. 1.—A schematic representation of the "coated tissue technique" for autography showing a preparation in cross section. Each dot represents a group of radioactive atoms, each circle the maximum range of penetration of its particles. The black areas represent the zone of the photographic emulsion affected. Note that the gamma ray source will affect the entire emulsion surface.

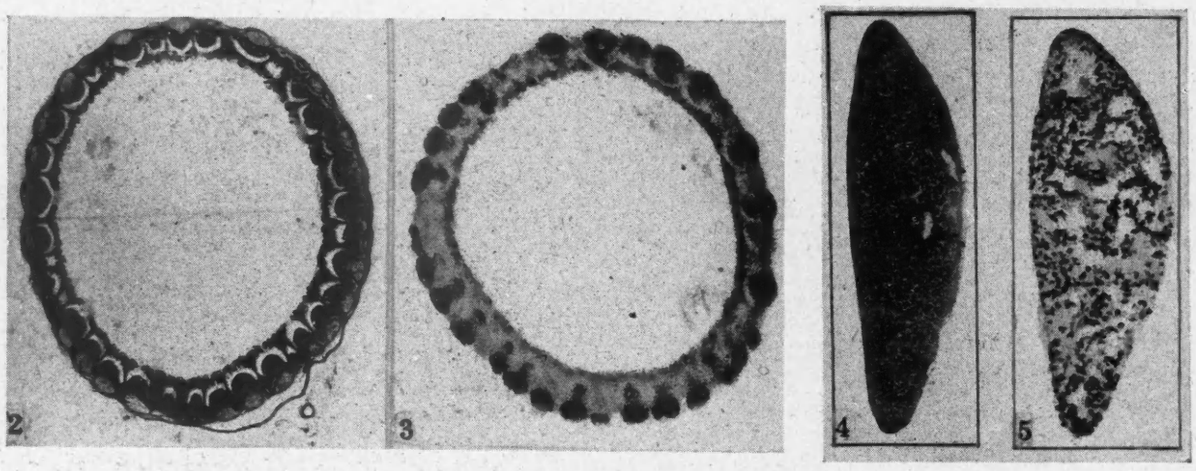
circle; while atoms farther from the emulsion will have less effect.* When the α-emitter is more than 50 micra away, its particles will have no effect at all. The β-emitting atom having a much larger radius for its active particles will result in a more diffuse image. The radius of the γ range is so great that it may result in a diffuse fogging, although most of the particles penetrate so rapidly that they may not effect the emulsion at all. From this it may be seen that the α particle is most effective, the β particle somewhat less effective and the γ radiation of little use in autography. In addition, it may be noted that, in the usual range of section thickness, the thinner the section containing the radioactive material, the less diffuse the image. This factor of section thickness will depend on the amount of radioactive material present in the organ and the practical difficulty in cutting such thin materials.

Much work has been done in developing emulsions for α particles. Blau[13] had modified an α sensitive emulsion so that it becomes insensitive to β and γ radiations and to light, the emulsion being 50 μ thick in order to absorb the particles of maximum range. Similar emulsion modifications remain to be developed for β particles. This would be of great interest since most artificial radio-elements of biological importance emit this type of particle.

* It has recently become possible to stain the slide prior to coating it with emulsion. The stained section is protected, by a special coating, from the stain-removing effects of the photographic developer and fixer.[52]

* These circles represent the theoretical maximum effect on the emulsion. In actual practice the photographic effect is maximum directly over the source of radiation, decreasing as the square of the distance from the source. Thus with β-emitting elements, localization within a few micra can be obtained.

Besides being affected by the sensitivity of the emulsion, the length of exposure will depend on the rate at which radioactive particles are being released (the half-life) and as well on the energy of the particle itself. One α particle will result in a recognizable effect on a photographic plate, while it takes 5 to 10 hits with average strength β-rays to achieve equivalent results (Wilkins[4]). As a working rule for β radiation, Hamilton[14] feels that satisfactory autographs may be obtained when the sections contain enough radioactive atoms to give 2 x 10^6 particles per square centimetre of film during exposure. This is for elements whose β particle energy is greater than 0.15 million electron volts. Thus the strength of the sample and the duration of its half-life will be important factors affecting length of exposure.



Figs. 2 and 3.—A section (Fig. 2) and corresponding autograph (Fig. 3) of the rabbit cæcum. Note the dark round masses corresponding to the lymphoid accumulations.

Figs. 4 and 5.—A section (Fig. 4) and corresponding autograph (Fig. 5) of the spleen of a rabbit injected with 500 electrostatic units of polonium.

(A. Lacassagne, J. Lattés, J. Lavedan, *Journal de Radiologie et Electrologie*).

APPLICATIONS OF THE METHOD

This procedure has been used to correlate biochemical processes with the microscopic anatomy of tissues. At first the work was confined to those processes in which the natural radioactive elements take part. With the advent of the artificial radio elements, new horizons have appeared and this technique has been utilized to elucidate many fundamental points in animal and plant physiology. Believing that it might be of interest to correlate these facts, an attempt will be made to briefly review the work done to date, by this method, in experimental animals and man.

POLONIUM

Polonium is a naturally occurring radioactive element with a half-life of 140 days (*i.e.*, in 140 days only 50% of the original activity remains) emitting alpha particles. Lacassagne[6, 7, 10, 16] investigated its distribution in the animal body by various methods and found interesting localizations, especially by using the autographic technique (Figs. 2, 3, 4 and 5). In rabbits he was able to show that polonium localized in various types of cells, which he classified into two groups: (1) the organs of *retention, i.e.,* those rapidly removing polonium from the circulation and slowly releasing it for excretion and (2) the *excretory organs, i.e.,* those which rapidly eliminated the element.

The *retaining organs* include the tissues and cells which are now considered as belonging to the reticulo-endothelial system: reticular cells of the lymphatic system (lymph nodes, lymphatic nodules of intestine, thymus, etc.) with the exception of the splenic lymphatic nodules; perivascular and endothelial cells of splenic red pulp, bone marrow, pancreas and salivary glands. In addition, polonium was found in atretic ovarian follicles, interstitial cells of the testis, chorionic tissue of the placenta, and reticular zone of the adrenals. It may be of some significance that these four types of organs produce steroid hormones and that in them, polonium showed an affinity for dying cells.

The *organs of excretion* are mainly kidney, liver, lung, intestine and the skin. Autographs of the kidney showed polonium present in the proximal convoluted tubules and not inside the glomeruli. In the liver it was shown that the polonium was fixed in the Kupffer cells and passed through the hepatic cells into the bile. In the lung, it could be demonstrated that the injected material was taken up by alveolar cells which swelled and were finally desquamated into the alveoli. This latter mechanism could be detected several months after injection.

The destructive action was maximal on those cells within the range (about 50 μ) of the alpha particles, especially in lymph nodes and bone marrow. Indeed, by varying the amount of radioactivity in the injected material, Lacassagne showed that cell formation in both the red and white hæmatopoietic series could be temporarily inhibited, recovering after several weeks. In this connection the lymphocytes seemed to be more sensitive than the other white blood cell series. The destruction of lymphocytes could result from the bombardment by polonium or could be due to the general toxic action of this substance, since lymphatic destruction is easily produced by most toxic agents acting through the adrenal cortex. Removal of the adrenal cortex, however, did not prevent lymphatic involution with polonium as it does with other toxic agents.[50] It is therefore likely that the lymphocytes are destroyed by the emission from the polonium in the stroma cells. The latter which are more radio-resistant, are relatively unaffected.

The destruction of the germinal elements in seminal tubules was attributed to a radiation effect of the polonium located in the interstitial cells. The cells of the other organs showed little degenerative changes, with doses that were sufficient to cause seminal and lymphocytic involution.

The sensitivity of the hæmatopoietic system and the testes to polonium radiation leads one to think of practical therapeutic applications. In the treatment of leukæmia, polonium might be the radioactive material of choice. Its selective localization and action on the hæmatopoietic organs might well improve on the therapeutic effects of x-radiation. In testicular tumours, especially chorio-epitheliomata, the selective localization in the testis and in chorionic tissue might allow the polonium to selectively irradiate the malignancy.

LEAD

Since radium D, one of the transformation products of radium, is chemically identical with *lead*, but gives off β particles, it may be used to trace the distribution of lead in the body. Results obtained with inactive lead or with its isotope radium D, were identical.

Lomholt[20] was able to show that 24 hours after injection of radium D (radio-lead), it was deposited in the internal organs, liver, spleen, kidney and intestine and to a lesser extent pancreas and muscles. Furthermore, the presence of lead was observed in the bones, especially in the layer of bone adjacent to the periosteum; the cartilage, however, did not react.

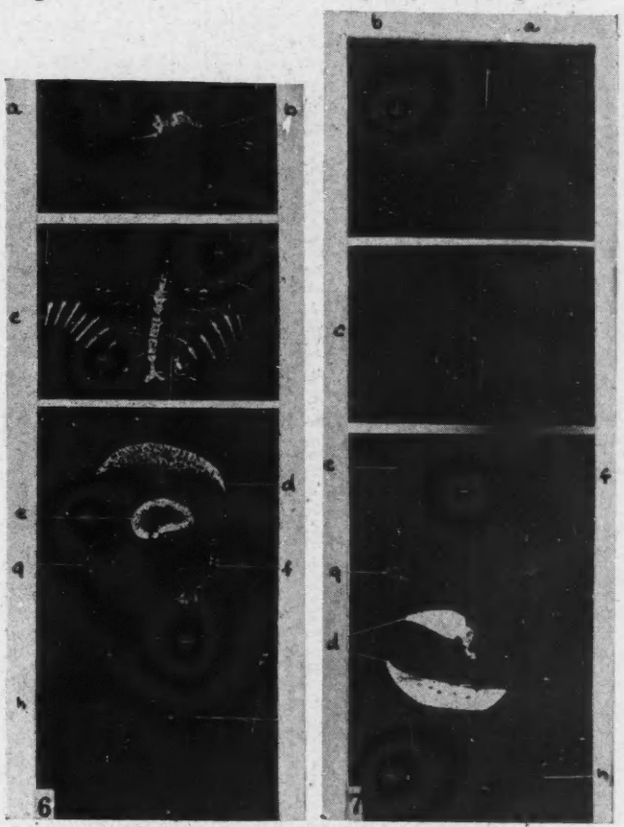


Fig. 6.—Autographs of organs of a mouse given 0.01 gamma of radioactive lead (tracer dose).

Fig. 7.—Autographs of organs of a mouse given 1 mgm. of lead labelled with radioactive lead (carrier dose).

(*a*) Tibia; (*b*) femur; (*c*) sternum and ribs; (*d*) liver; (*e*) kidney; (*f*) spleen; (*g*) coagulated blood; (*h*) intestine.

(B. Behrens, A. Baumann, *Zeitscrift für die Gesamte Experimentelle Medizin*).

Behrens and Bauman,[18, 19] using lead labelled with another one of its isotopes, thorium B, not only could confirm the localization in bone

and elsewhere, but were able to draw conclusions of great physiological significance. They found that a mouse receiving intravenous injections of small amounts of lead (0.01 microgram), or to use present day terminology a "tracer" dose of lead, showed a large concentration in the kidney cortex and liver, somewhat less in the bones and spleen, and still less in small intestine and blood (Fig. 6). If the dose injected into the mouse was large (1 milligram), *i.e.*, a "carrier" dose of lead, most of the injected material was in the liver, smaller amounts in the spleen and blood, while little was found in the bones, kidney and gut (Fig. 7). They found no photographic reaction in skin, muscle, fatty tissue and brain. A detailed study of the gastro-intestinal tract showed a greater reaction in the small intestine than in the other parts of the digestive system (Fig. 8). In all parts the most intense reaction was in the glandular epithelium; a somewhat lesser concentration was found in the serosa, while the submocosa, muscular layers and lymph follicles were free of lead (Figs. 9 and 10, 11 and 12).

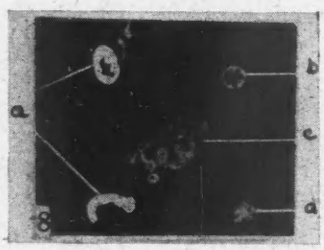
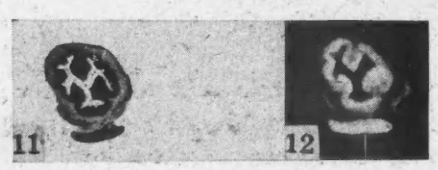
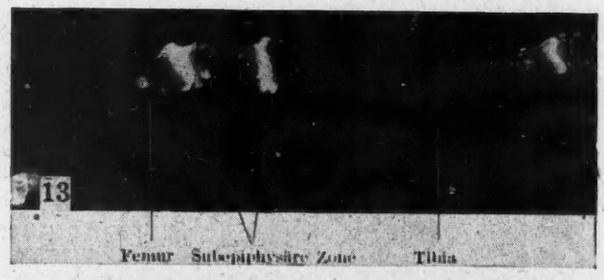


Fig. 8.—Autographs of the gastro-intestinal tract of a radio-lead treated rat. (*a*) Small intestine; (*b*) large intestine; (*c*) stomach; (*d*) terminal portion of colon.



Figs. 9 and 10.—Section (Fig. 9) and autograph (Fig. 10) of the stomach of a mouse 1 hour after intravenous injection of 1 mgm. of labelled lead. Note how the lead is mainly in the mucous membrane. **Figs. 11 and 12.**—Section (Fig. 11) and autograph (Fig. 12) of the small intestine of a mouse 1 hour after the intravenous injection of of 1 mgm. of labelled lead. (B. Behrens, A. Baumann, *ibid.*).

Mice and rats at various stages of growth were treated with the minute dose of radio-lead (0.01 microgram) and showed a deposition of this element in newly-formed bone, with none in compact bone and cartilage. The lead was readily found in the ossification zones of young animals, whether endochondral (Fig. 13) or periosteal (Fig. 14 and Figs. 16 to 19) and, in adult animals, in the epiphyses and to a slight extent under the periosteum (Fig. 15). In general, the radioactive lead was found in all bony regions staining by Kossa's method, which is believed to stain newly-deposited labile calcium.



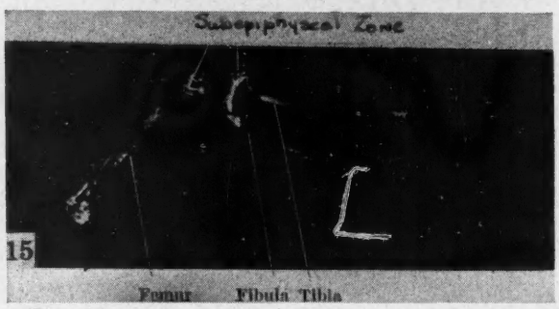
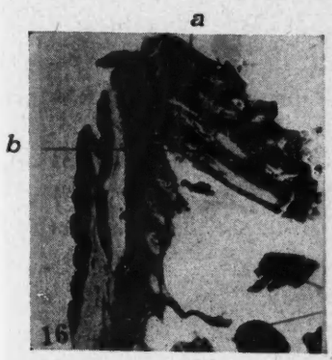
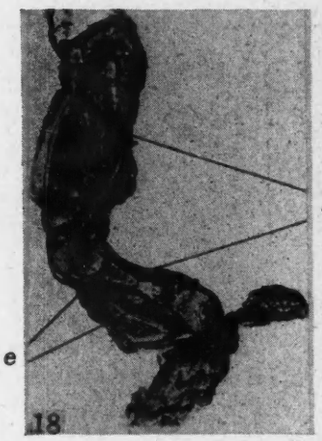


Fig. 13.—Autographs of the femur and tibia of a young rat (34 gm.) injected with 0.01 gamma of radioactive lead. **Fig. 14.**—Autographs of the sternum and ribs of a young rat (42 gm.) treated as in Fig. 13. **Fig. 15.**—Autographs of the femur, tibia and fibula of a mature rat treated as in Fig. 13. (B. Behrens, A. Baumann, *ibid.*).

The lead distribution in callus was examined 16 days after fracture and, as Fig. 20 indicates, the deposition in the callus was as intense as in the subepiphyseal layer. In another experiment in which, 23 days after fracture, no callus could be demonstrated by x-ray, there was only slight lead concentration. They concluded that





Figs. 16 and 17.—Section and autograph of the ribs of a 19 mm. rat embryo. (*a*) Perichondral ossification; (*b*) endochondral ossification; (*c*) liver.

Figs. 18 and 19.—Section and autograph of the femur and tibia of the same animal. (*d*) Perichondral ossification; (*e*) epiphyseal ossification areas. (B. Behrens, A. Baumann, *ibid.*).

lead is deposited when and where calcium is itself being deposited.

In young rats fed a rachitic diet for 14 days, a slight lead deposition was observed in the wide zone of osteoid proliferation present in the epiphyseal plate; while almost no lead was fixed in the other parts of the long bones (Fig. 21). Several animals, after 35 days on the diet, began to show spontaneous healing and this was evidenced by an increased lead fixation with the appearance of a slender ossification zone on the edges of the osteoid area (Fig. 22).

From these results they concluded that the calcium phosphate compound, present in the subepiphyseal and subperiosteal areas, is chemically different from that in the compact bone and that, in the former, the lead replaced the calcium. This agreed with the work of Kramer and Shear who found in newly formed bone tissue, in freshly calcified cartilage and in young callus a different calcium phosphorus quotient than in already formed bone.

Fig. 20.—Autographs of the tibia of a rat 16 days after artificial fracture. **Fig. 21.**—Autographs of the tibia and femur of a rachitic rat. (*a*) Zone of osteoid proliferation. **Fig. 22.**—Autographs of the tibia and femur of a rachitic rat showing spontaneous healing. (*a*) Indicates the edge of the osteoid zone showing beginning of calcification. (B. Behrens, A. Baumann, *ibid.*).

Lead follows the fate of calcium not only in bones, but also in various pathological types of calcification. The kidney of a rat in which the renal artery had been occluded for 3 hours, 22

Fig. 23.—Autograph of a rat kidney in which the renal artery had been occluded for 3 hours, 22 days prior to injection of radioactive lead. Note radio-lead in areas of pathological calcification. **Fig. 24.**—Autograph of the placenta of a pregnant rat in which the fetuses had been dead for some time. Note radio-lead in areas of pathological calcification.

days prior to the injection of lead showed calcification in the convoluted tubules with accompanying lead accumulation (Fig. 23). The placenta of a rat in which the fetuses had died some time before the experiment, showed areas of calcification which were also found to contain radio-lead (Fig. 24).

of the stomach (Fig. 26); the location of calcium shown as a black line by Kossa's reaction may be noted on the microphotograph of the section (Fig. 25). On the other hand, the calcium gluconate prevented to some extent the entry of lead into bones (Figs. 27 and 28) apparently "diluting" the circulating lead, as

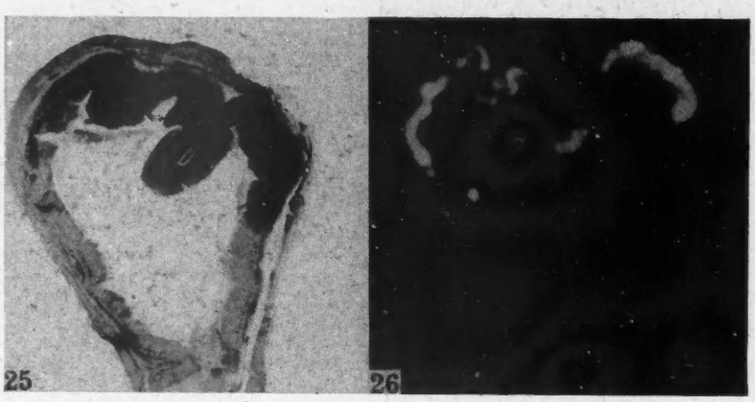


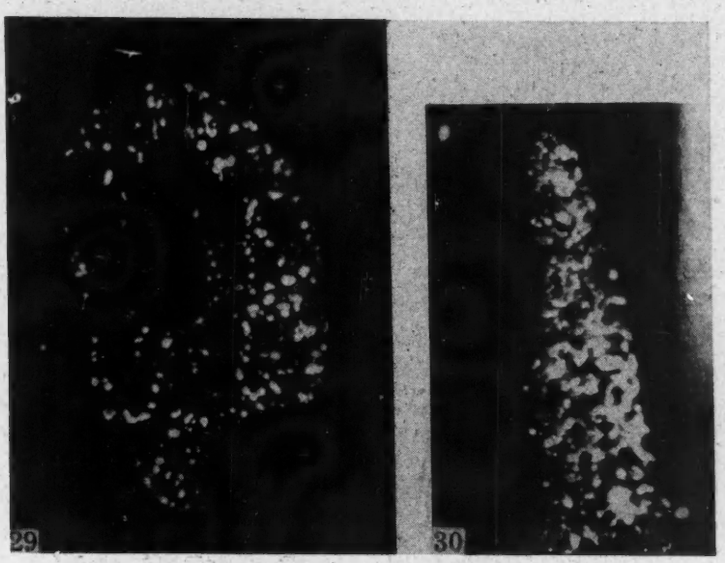
Fig. 25.—Section of the stomach of rat given calcium gluconate subcutaneously on the 7th and 8th days prior to the radioactive injection. The staining was v. Kossa's calcium stain which stains calcium black. **Fig. 26.**—Autograph corresponding to Fig. 25. (B. Behrens, A. Baumann).

Massive deposits of calcium are also found in animals given large doses of calcium salts. In rats treated, one week prior to radio-lead injection, with a 10 c.c. dose of 10% calcium gluconate, Behrens and Baumann found lead accumulation paralleling calcification in the epithelium of the convoluted tubules of the kidney and in the fibrous stroma of the fundic glands

was also the case when the radio-lead was "diluted" with large amounts of inactive lead (Fig. 7).

With high doses of ergosterol for 9 days, they were able to produce other forms of metastatic calcification. Radio-lead was deposited in the calcifications of urinary tubules and the intervening connective tissue (Fig. 29).

Fig. 27.—Autographs of the tibia and fibula of a rat given calcium gluconate subcutaneously just prior to radio-lead injection. **Fig. 28** shows the bones of a control rat. (B. Behrens, A. Baumann, *ibid.*).



Figs. 29 and 30.—Kidney and lung of a mouse treated with very large amounts of irradiated ergosterol before radiolead injection. (B. Behrens, A. Baumann, *ibid.*).

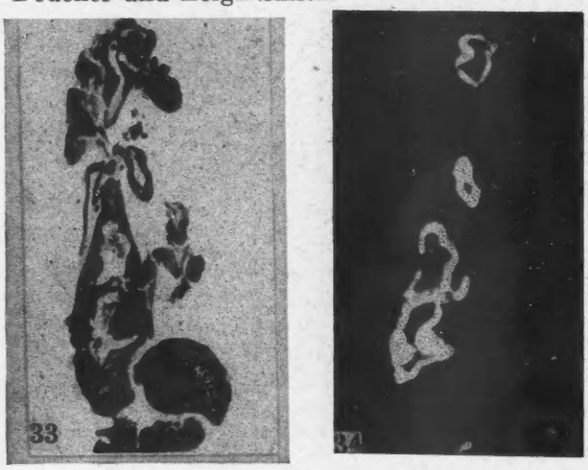
Similarly in the interglandular connective tissue in the alveolar stroma of the lungs (Fig. 30), in the subendothelial connective tissue of the heart chambers and the large vessels (Fig. 31), as well as in the abdominal aorta (Figs. 33 and 34) and in the chorionic tissue of the placenta (Fig. 32), there was a lead deposition corresponding to the calcified areas.

When they gave a rat 5 to 8 c.c. of N/10 HCl, 22 hours before the lead injection, they found a much diminished deposition in the bones (Fig. 36) as compared to the control (Fig. 35). The other organs were essentially equal in lead content with the exception of the kidney of the experimental animal, which showed a somewhat depressed level. Therefore, the main action of the acid was to prevent the entry of lead (and presumably of calcium) into the bones.

The use of the autograph method in this work permitted localization that would have been impossible by ordinary chemical means, and indicates the necessity of this type of histobiochemical experiment as a preliminary to the investigation of any radioactive compound for therapeutic purposes. Some of the facts eluci-

Figs. 31 and 32.—Heart and placenta of a mouse treated as in Figs. 29 and 30.

dated above might well be useful in therapy; certainly the localization of minute doses of lead in areas of active calcium metabolism suggests a possible use in tumours of bone. Some work has already been done in this direction by Deucher and Leigh-Smith.[48]



Figs. 33 and 34.—Abdominal aorta of a vitamin D-overdosed mouse. The section is stained with v. Kossa's stain. (B. Behrens, A. Baumann, *ibid.*).

radioactive serum, prepared by exposure to radium emanation (radon), found its way preferentially into malignant tissue. Lacassagne,[46, 47] however, was unable to confirm these results and showed autographically that, in sarcoma and epithelioma-bearing rats treated by this procedure, the radioactive material was uniformly spread throughout the body and, furthermore, that the tumour areas showed a lower concentration of radioactivity than normal tissues.

Gettler[22] used a somewhat crude technique on a victim of radium poisoning. This man had consumed a patent medicine containing 2 micrograms of radium per bottle. Over a period of 5 years he had taken 1,400 bottles of this nostrum. Autographs of his bones were used to show the presence of radium.

Mallet[21] found that thorium X added to the culture medium of algæ and bacteria was accumulated by these organisms, as shown by the autographs of smears. In this type of experiment, single labelled micro-organisms would affect the photographic emulsion. With this in mind, Mallet suggests that it might be possible to cause the incorporation of thorium X into viruses, rendering them photographically visible. However, this remains to be investigated, and since no illustrations are presented, it is difficult to evaluate the method at this time.

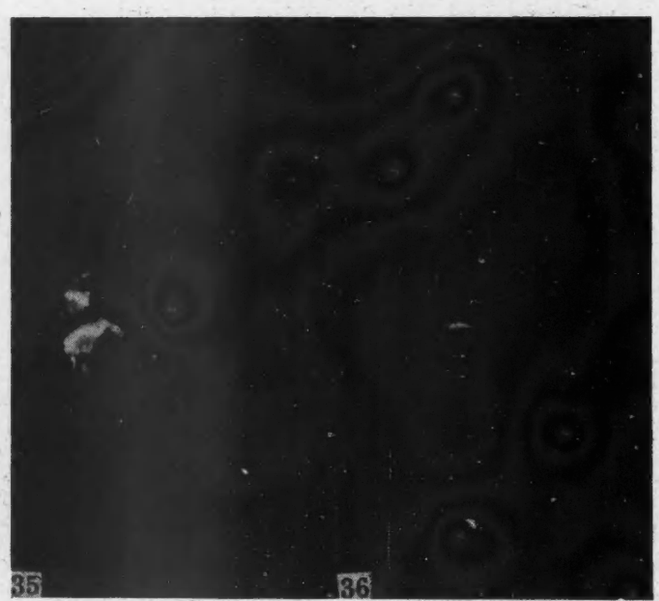


Fig. 35.—The tibia and fibula of a control animal. **Fig. 36.**—The tibia and fibula of a rat given N/10 HCl by stomach tube prior to the injection of radioactive lead. (B. Behrens, A. Baumann, *ibid.*).

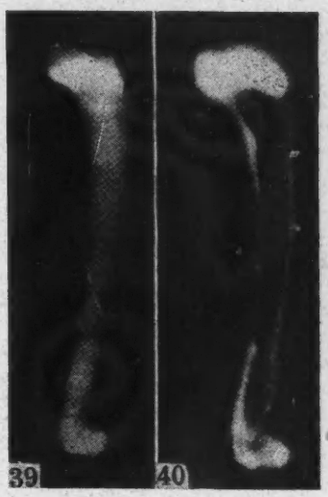
RADIUM AND THORIUM

Kotzareff[43] injected radium in solution or oily suspension subcutaneously and intravenously, and placed a light-protected photographic film over the site of injection or over the organ being investigated. In one case, after autopsy, he placed the organ on a photographic plate and obtained one of the first autographs ever described. Subsequently,[44, 45] he claimed that

PHOSPHORUS, CALCIUM, STRONTIUM, ZINC

In line with the deposition of lead are the facts found concerning the β-emitters phosphorus[32], calcium[45] and strontium[89], which occur in highest concentrations in the skeleton. However, Pecher showed that calcium and strontium enter the bones to a greater extent than phosphorus.[24, 26, 29] This seems to be due to the uptake of phosphorus in many other organs, where it is needed to build hexose-phosphates, phospholipids, nucleoproteins, etc. This is shown in Fig. 37, an autograph of a mouse 60 hours after the injection of radio-phosphorus and in its counterpart, Fig. 38, an autograph of a mouse injected with radio-strontium. In both, the bones and the roots of the teeth show strong radioactivity. In Fig. 37, however, the soft tissues and especially the liver are strongly radioactive with little in the intestines, while Fig. 38 shows activity only in the bones and in fæcal masses in the colon. These findings were borne out by radioactivity measurements. Similarly, autographs of single bones showed, that, after radiophosphorus treatment, there was marked activity in bone and bone marrow, while the radio-strontium was located only in bone (Figs. 39 and 40).

Figs. 37 and 38.—Autographs of whole mice 60 hours after the intravenous injection of radio-phosphate (Fig. 36) and radio-strontium (Fig. 37). Doses: P^{32}, 50 microcuries; Sr^{89}, 17 microcuries. Exposure 6 hours.



Figs. 39 and 40.—Humeri of rabbits 5 days after the administration of 1 millicurie of radio-phosphate (Fig. 39) and 0.3 millicurie of radio-strontium lactate (Fig. 40). Exposure 2 days. (Pecher, *Univ. Cal. Pub. Pharmac.*).

Figs. 41 and 42.—Autographs of whole mice bearing bilateral lymphosarcomata given radio-strontium lactate (Fig. 41) and sodium radio-phosphate (Fig. 42). (J. H. Lawrence, *American Journal of Radiology and Radium Therapy*).

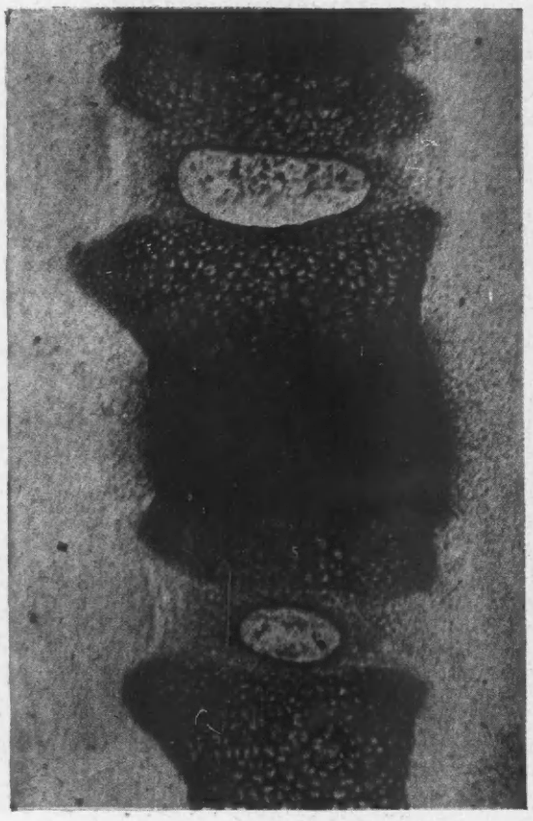


Fig. 43

Fig. 44

Fig. 43.—Median longitudinal section of tail vertebra. In this preossification phase of development, the cartilaginous anlage of the vertebra shows an impregnation with radio-phosphorus in the central portion, where the cartilage cells are degenerating. Stain: methylene blue.

Fig. 44.—Transverse section of the lower jaw, posterior region. The membranous mandible is heavily impregnated with phosphorus. The molar tooth buds inside the bony arch show the phosphorus deposited in the dentine. Stain: Harris' hæmatoxylin.

These autographs were obtained by the new technique of coating the histological section itself with a photographic emulsion. (L. F. Belanger, C. P. Leblond, *Endocrinology*).

This is also apparent in Figs. 41 and 42 taken from Lawrence[23] which shows two mice bearing bilateral lymphosarcomata; the animal on the right received sodium radio-phosphate, the one on the left, radio-strontium lactate. The strontium radioactivity is confined to bony tissues, while phosphorus, in addition to entering the bones, goes into the tumour masses.

Dols and collaborators[27, 28] injected radiophosphate intraperitoneally into chickens and were able to demonstrate with rather crude autographs that the phosphate localized to a greater extent in the epiphysis than the diaphysis. In rachitic animals the phosphorus uptake in the epiphysis was more intense than in normals.

Recently, the fate of radioactive phosphorus was followed in newborn mice and rats.[9, 49, 52] Large amounts of radiophosphate were found in all calcified areas, including bone, dentine, enamel and calcified cartilage. The new technique, described previously, of coating the microscopic section with a sensitive photographic emulsion was used. The black areas representing the radioactive material are seen overlying the histological sections (Figs. 43, 44, 45 and 46). The phosphate impregnation is visible in ossifying cartilage cells of the tail vertebræ (Fig. 43) and in the cross-sections of the tibia and fibula showing periosteal bone formation (Fig. 45). The mandibles shown in Fig. 44 and Fig. 46 demonstrate the presence of the phosphorus in the membranous bones. Inside the arch, the tooth buds show some phosphorus deposition in the dentine. More recent investigations[52] confirm these results in the newborn rat, showing that the entry of phosphorus is extremely rapid, reaching a maximum within a few hours after injection, and extends to all bony formations, including the

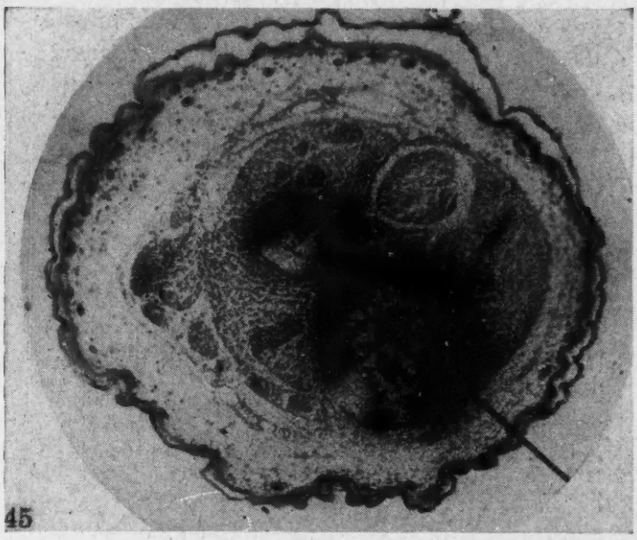


Fig. 45.—Cross section through the lower limb of a newborn mouse injected with radio-phosphate: The deposition of the radiophosphate is in the shafts of the tibia and fibula. (*a*) Indicates the periosteal layer of the tibia (coated section technique). **Fig. 46.**—Section through the lower jaw of the animal in Fig. 45. The radioactive phosphorus outlines the mandible. A developing incisor tooth in the right portion of the jaw shows some phosphate deposition (coated section technique). L. F. Belanger, C. P. Leblond, *ibid.*).

tooth germ. It is interesting to note that bony tissues also showed the calcium reaction of von Kossa and phosphatase reactions in the very locations where the radio-phosphorus is deposited. This rapid deposition of phosphorus throughout the bony tissues of the newborn animal may be contrasted with the fact that in adult animals the elements are deposited only in restricted areas of the bones; to which phosphatase and Von Kossa's reactions are also restricted. This result suggests that the lability of calcium and phosphorus—in restricted areas in the adult and throughout bony structures in the newborn—is to some extent related to the presence of phosphatase.[52]

While a good deal of phosphorus finds its way into the soft organs, both calcium and strontium have a parallel behaviour and are mostly found in bones.[26] In Figs. 47 to 52 the metabolism of strontium is followed on the autographs of mice killed at various time intervals after the intravenous injection of 0.1 mgm. of radio-strontium. The animals were frozen in liquid air and placed on the photographic plates for 60 hours. At 15 seconds after injection

Figs. 47 to 52.—Autographs of mice (30 gm.) killed at different periods following the intravenous administration of 0.1 mgm. of radioactive strontium. Fig. 47—15 seconds after injection, Fig. 48—5 minutes, Fig. 49—15 minutes, Fig. 50—3 hours and 40 minutes, Fig. 51—28 hours, Fig. 52—53 hours. (C. Pecher, *ibid.*).

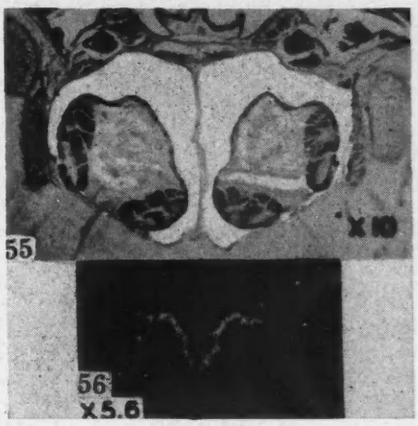
(Fig. 47) the radio-stronium is present in the vascular system, vena cava, heart and cranial sinuses. At 5 minutes, the element begins to concentrate in the skeleton; the vascular content is still quite high, while non-vascular organs such as brain and testes show little activity; in addition, the intestinal content is inactive (Fig. 48). At 15 minutes (Fig. 49), the bones show marked activity; the trachea, which was somewhat calcified, shows an appreciable amount; little remaining in the soft tissues (lungs). At this time some of the strontium is beginning to localize in the small intestine. Fig. 50 was obtained 3 hours and 40 minutes after injection and it is apparent that there is little activity left in the soft tissues but the intestinal content, especially the colon, is strongly radioactive. At 28 hours (Fig. 51) the activity is confined to the skeleton and will remain there for weeks. It is interesting to note how closely these photographic results correlate with those found by direct measurement with the Geiger counter.

The deposition of strontium parallels that of calcium^{45} very closely, as shown with the Geiger counter. Unfortunately, because of the low energy and specific activity of Ca^{45}, it is difficult to obtain autographs. The parallel distribution of the two substances extends to their excretion, being primarily in the fæces and secondarily in the urine. Because of this parallel behaviour, the energetic character of the Sr^{89} beta rays and the absence of toxicity in the small doses of the element required, Pecher felt that the strontium^{89} isotope could be used for the selective irradiation of radiosensitive skeletal tumours.

Figs. 53 and 54.—Roentgenogram and autograph, respectively, of the leg containing an osteogenic sarcoma; 357 microcuries of radio-strontium had been administered intravenously 5 days prior to amputation. Note the marked deposition of the element in the epiphyseal line and in the tumour. (C. Pecher, *ibid.*).

Treadwell[25] worked on this problem and found that radio-strontium is taken up by growing bone and osteogenic tumour tissue. Figs. 53 and 54 show a roentgenogram and an autograph of a limb, containing an osteogenic sarcoma, removed from a patient, given tracer amounts of Sr^{89}, 5 days before amputation. It is clear from the illustration that radio-strontium is present in greatest amounts in the tumour tissue and epiphyseal lines, which corresponded with the radioactivity measurements. In addition to osteogenic tumours, they used strontium in one case of carcinoma of the prostate with bony metastases with some evidence of uptake; and later with the use of larger doses, they had some evidence of amelioration of the condition.

Little has been described concerning the use of radioactive zinc[63], except for some work in plants.[30] Some investigation on local implanta-



Figs. 55 and 56.—Section and the corresponding autograph through the anterior chambers of the endostyle of a 118 mm. lamprey larva, which had been placed in a solution of radioactive iodine (200 microcuries per litre). Note the deposition in the cells lining the chambers. (A. Gorbman and C. W. Creaser, *Journal of Experimental Zoology*).

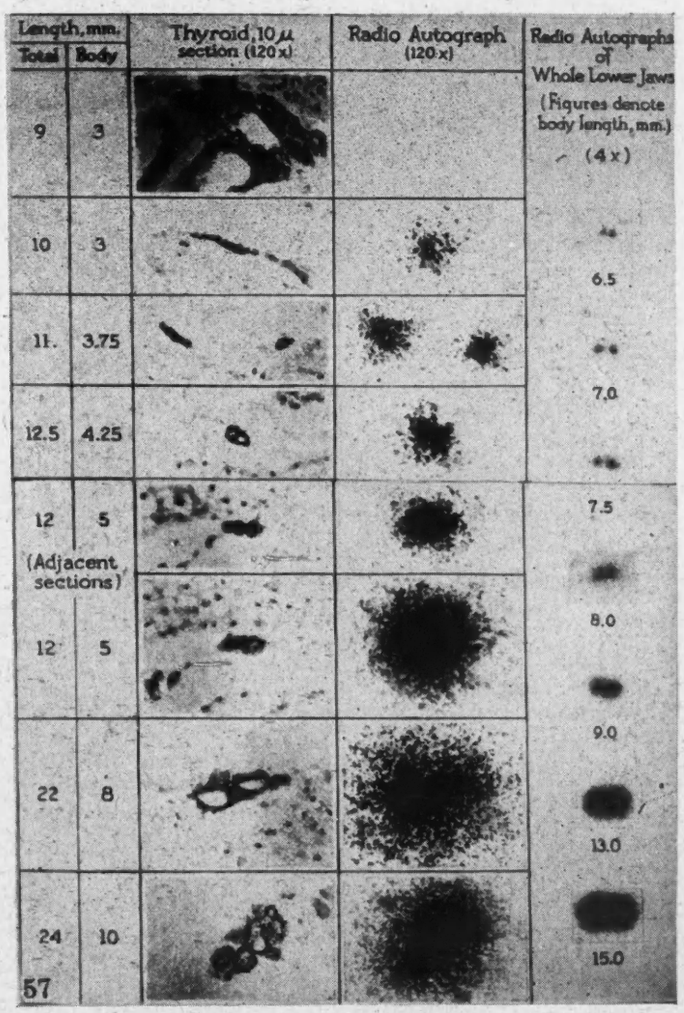


Fig. 57.—Autographs of the sections of the developing thyroid of the tadpole. (A. Gorbman and H. M. Evans, *Proceedings of the Society for Experimental Biology and Medicine*).

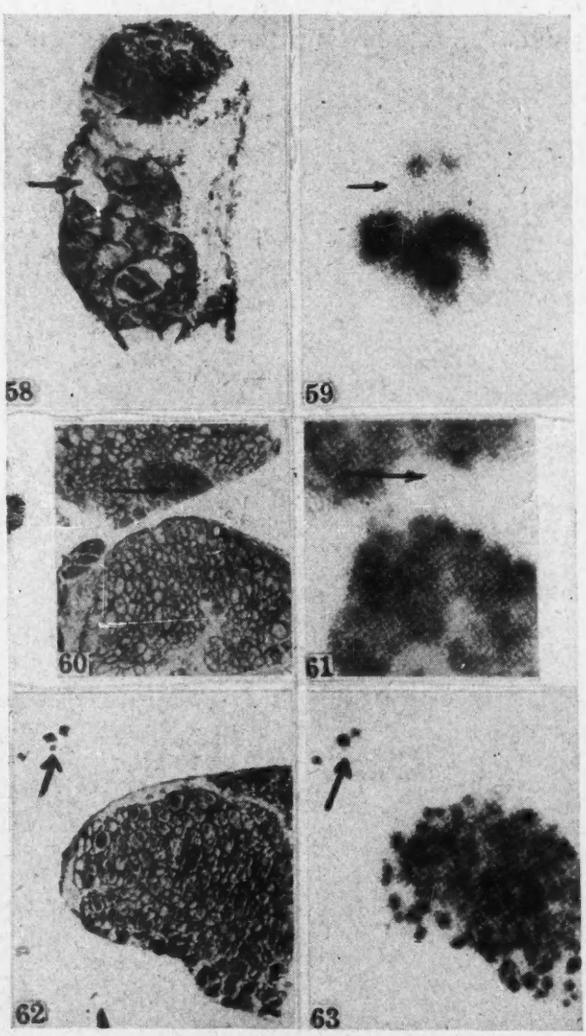
tion in tumours of cervix was reported with rather doubtful results. X-ray films on the surface of the abdomen were used to measure photographically the dose in r of the radiation administered.[31, 32a, 32b]

IODINE

The specific localization of iodine and its compounds in the thyroid gland has resulted in a large volume of autographic investigation using both iodine isotopes I^{130} (half-life, 12 hours) and I^{131} (half-life, 8 days). Hamilton[5] in 1940, was the first to use this method in the study of the deposition of iodine in the thyroid gland. Insofar as his investigations were clinical in character, they will be discussed toward the end of this section.

Gorbman[33 to 36] became interested in the evolution and embryonic development of the thyroid. Beginning with the Ascidians (higher invertebrates) he was able to show, autographically, in the case of *Perophora annectens* Ritter that radio-iodine was localized in a structure, the stolon, arising from the pharynx of the animal. He then investigated the iodine localization in lamprey larva and was able to show that the iodine was taken up by a pharyngeal derivative, the endostyle (Figs. 55 and 56), which in the adult lamprey will develop into the thyroid gland. It should be noted here that the iodine was added to the fluid medium as inorganic iodide; the tissue had been passed through the usual histologic routine which removes fatty and water soluble materials leaving mainly denatured protein. Thus, the iodine exerting its effect in these sections, was most likely in organic combination.

Ascending the evolutionary scale, Gorbman[35] investigated the earliest deposition of iodine in the thyroids of tadpoles. Tadpoles, varying in size from just hatched 7 mm. animals to tadpoles 38 mm. in length with well developed limbs, were placed in water containing radio-iodine as sodium iodide. The autographs made of sections of the thyroids and of the whole lower jaw (Fig. 57) show no iodine uptake in tadpoles, less than 10 mm. in total length. At this stage, follicles are just beginning to form. Radio-iodine is taken up at the next stage; and as the size of the thyroid and the amount of colloid increased, the sections produced an increased blackening of the photographic film. That this seems to be a function of the amount of colloid is demonstrated by the two adjacent thyroid sections of the animal 12 mm. in length; the lower section having more colloid, shows an increase in the uptake of iodine. Carrying his studies to mammals, Gorbman[36, 37] injected pregnant rats at various stages of pregnancy (from 15 to 21 days) with radioactive iodide and examined the uptake of iodine in the thyroids of the fetuses. Significant darkening of the emulsion did not occur before 19 days, and was considerably stronger in the embryo at birth, that is 21 days after the beginning of pregnancy. Histologically, differentiation of solid cell cords into follicles, without lumina, begins on the 18th day. Lumina with colloid appear on the 19th day, that is when radio-iodine is taken up by the gland. From these experiments it may be con-

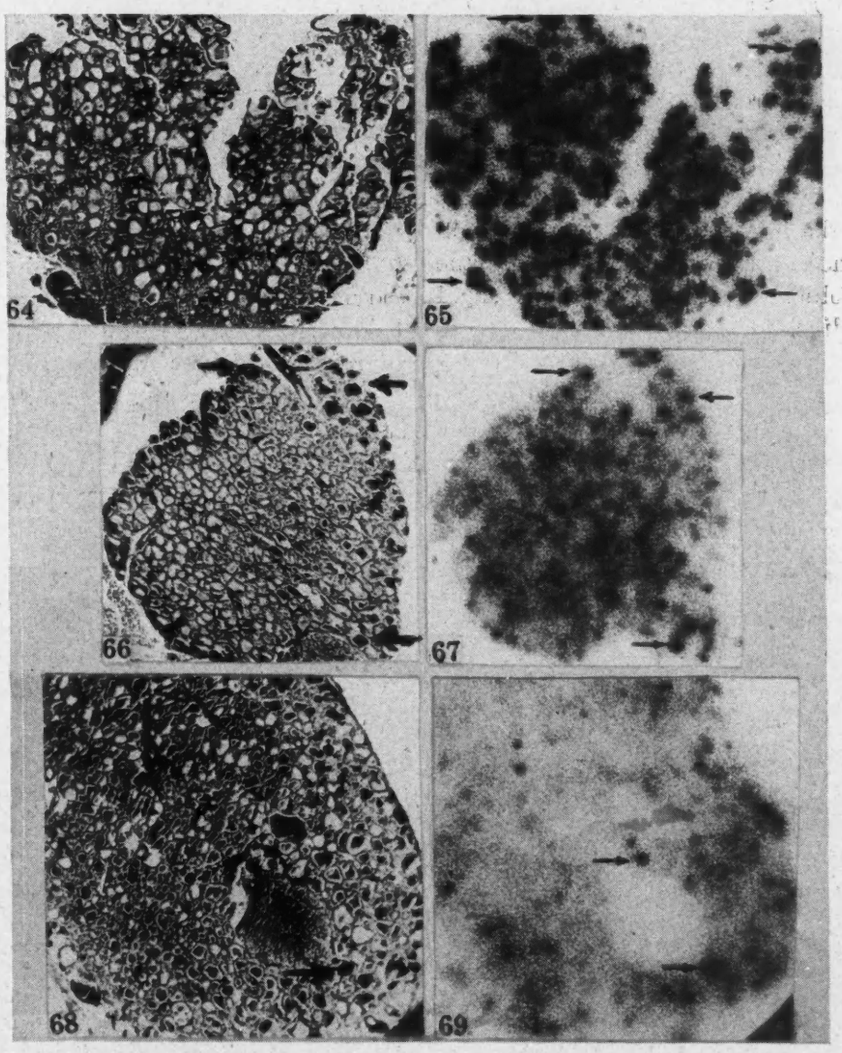


Figs. 58 to 63.—Sections and the corresponding autographs of the thyroids of rats treated with radioactive iodine. In Figs 58 and 59 the arrows indicate a follicle in which no colloid is present; Figs. 60 and 61 have arrows indicating the parathyroids while in Figs. 62 and 63 they point out isolated masses of cell-free colloid. (C. P. Leblond, *Journal of Anatomy*).

cluded that the functional activity of the thyroid gland in the embryo sets in with the appearance of well formed follicles and that, teleologically, the gland develops as an entodermal pharyngeal derivative.

In the mature animal, thyroid physiology has been extensively studied.[8, 11, 17] It was possible to show that, 24 hours after injection the iodine was primarily in the colloid. This is especially clear in Figs. 62 and 63; the 3 dark areas in the left hand upper corner being masses of cell-free colloid; in Figs. 58 and 59, the follicles in which the colloid is lacking (arrow) show no reaction; similarly the large mass of parathyroid tissue in Fig. 60 (arrow) has no activity as seen in Fig. 61. These results were obtained with the ordinary histological method, which removes water soluble radio-iodine compounds. Similar results were obtained by the freezing drying method[8] which preserves the water-soluble compounds. Therefore, it seems likely that iodine is rapidly bound to protein in the colloid.

To elucidate the hormonal interrelationships involving the thyroid gland, autographic study of the thyroid was performed in hypophysectomized rats and in animals treated with the thyroid-stimulating-hormone of the hypophysis. The animals had been given 2 micrograms of sodium radio-iodine intraperitoneally and sacrificed 15 hours subsequently. Very intense autographs were obtained with the thyroids from



Figs. 64 to 69.—Figs. 64 and 65, section of rat thyroid treated with hypophyseal extract. Figs. 66 and 67, section of thyroid from a control rat. Figs. 68 and 69, section of thyroid from a hypophysectomized rat.

All these animals had been injected with radio-iodine. Acidophilic colloid appears black, basophilic colloid grey, on the photographs. The arrows indicate a few acidophilic staining follicles. These should not be confused with red cell filled blood vessels. (C. P. Leblond, *Anatomical Record*).

rats treated with hypophyseal extract (Fig. 64 and 65), as compared to the normal controls (Figs. 66 and 67); while weak autographs were produced by the glands of animals deprived of their hypophyses (Figs. 68 and 69). The differential intensities were much greater than in the figures, but had to be reduced in order to enable their reproduction in print.

Additional facts concerning the activity of the colloid were obtained by correlating the density of the photographic darkening with the different staining reactions of the colloid. When the thyroid is stained with a trichrome stain, it normally shows a mixture of follicles taking up acid and basic dyes respectively. In stimulated glands however (*i.e.*, hypophyseal extract-treated animals), the follicular colloid is predominantly basophilic in character, while in resting glands (hypophysectomized animals) the colloid is characterized by an acidophilic staining reaction. It was found that the radio-iodine content of the basophilic follicles was higher soon after injection, but after 24 hours became lower than that of the acidophilic follicles. This indicates that the former are the more active follicles and show a more rapid turnover of iodine.

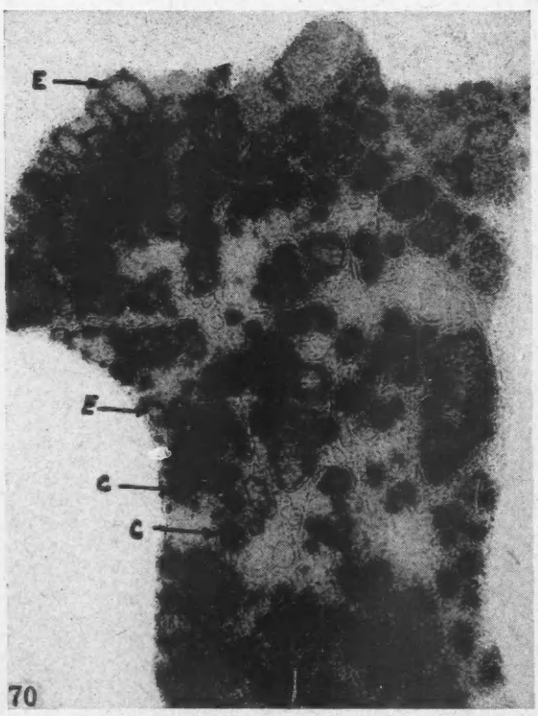


Fig. 70.—Thyroid of a rat given radio-iodine and sacrificed ½ hour after intravenous injection. Note that the iodine in some areas is in the colloid (*c*), elsewhere in the cells (*e*). This autograph was obtained by the coated section technique, the histological details being visible through the emulsion. (C. P. Leblond, unpublished).

Work currently in progress by Findlay and the authors has shown that within 1 hour after administration, radio-iodine may be found in both the thyroid cells (Fig. 70, dark rings) and the follicle colloid (Fig. 70, solid dark masses). Since at later intervals, the isotope is found almost exclusively in the colloid, these findings suggest that the cells convert inorganic iodide into organically bound iodine, which is subsequently stored in the colloid, and that these transformations proceed at a surprisingly rapid rate.

These processes, however, are inhibited by the thiourea-type drugs. Couceiro[41] showed that the thyroids of thiouracil-treated rats produced no autographs, as compared to the normal controls. This data has been supported by the chemical findings showing that the thiouracil-treated thyroids may take up iodide, but will not convert it into an organically bound compound.

Completing this discussion on the autographic method with radio-iodine in animal experimentation, it may be noted that Reinhardt[42] used the method to establish the completeness of thyroidectomy in rats. After injection of radio-iodine, he autographed the tissues about the operative site, and thus was able to detect thyroid remnants escaping gross observation.

In clinical investigation, autographic iodine studies have yielded interesting data. Hamilton[5] administered radio-iodine to 9 patients with thyroid disease, 5 with non-toxic goitre, 2 with hyperthyroidism and 2 with carcinoma of the thyroid. The thyroids were removed 2 days after injection and autographic studies were carried out. He was thus able to show for the first time (1940) that normal thyroid tissue reacts markedly (Figs. 71 and 72). In hyperthyroid patients, he noted a marked reaction in the zones of hyperplasia formed by groups of small follicles; these micro-follicles fixing more radio-iodine than the large colloid filled follicles.[5]

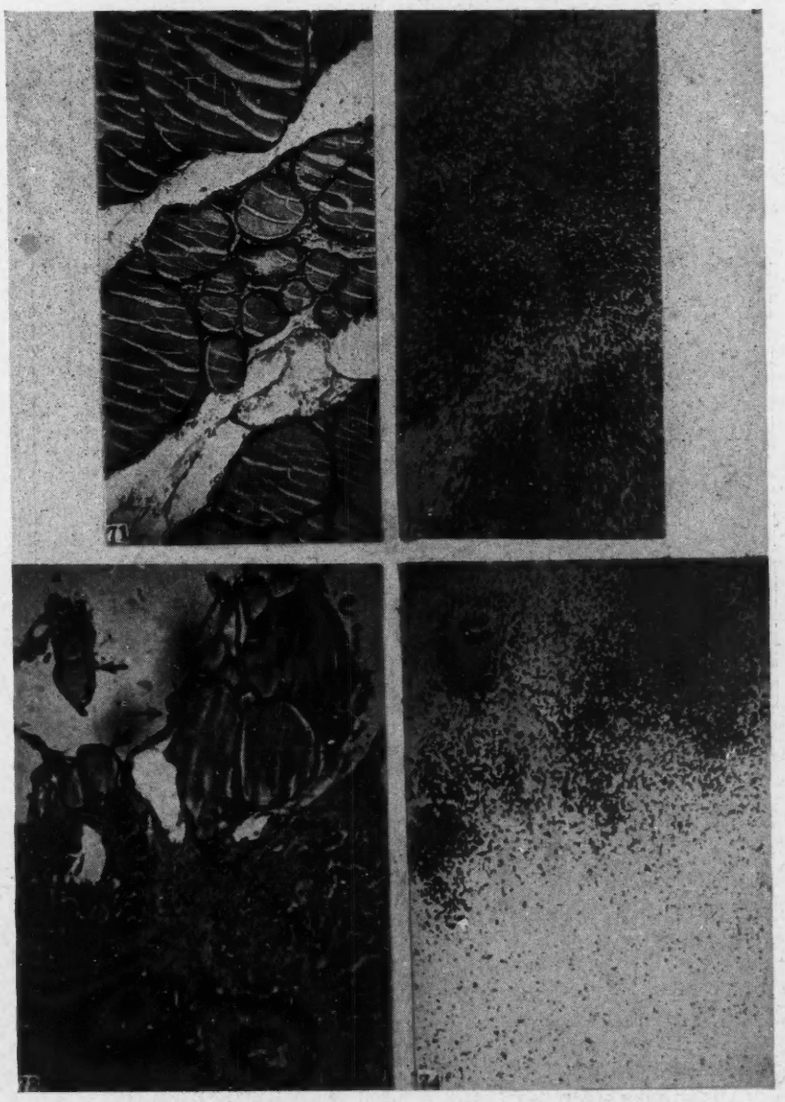
More recent clinical studies in hyperthyroid patients showed (Figs. 75 to 78) that, about a day after injection, the radio-iodine had passed through the epithelium and was incorporated in the colloid of both large and small follicles.[39]

In 2 hypothyroid children with enlarged thyroids, Hamilton[38] found that, as late as five days after radio-iodine administration, some was still retained in the cells of the large follicles, thus suggesting a reduced rate of activity (Figs. 79 and 80). In smaller, more active follicles, the radio-iodine was in the colloid (Figs. 81 and

82). In patients, in which there was no palpable enlargement of the gland, little radio-iodine was taken up; which seems to indicate a low thyroid activity, accounting for the hypothyroidism.

Thyroid malignancies are variable in their ability to fix iodine. Two cases of adenocarcinoma reported by Hamilton (Figs. 73 and 74) were non-functional, but others reported cases fixing radio-iodine like true thyroid tissue. Thus Keston injecting radio-iodine into a patient with a metastatic adenocarcinoma of the thyroid, obtained an image on a photographic film placed near a femoral metastasis. The position of this metastasis as shown by the autograph agreed with the area of bony destruction shown by x-ray. Subsequent (3 weeks) to a therapeutic dose of radioactive iodine, the metastasis showed no appreciable uptake. Other metastases which had previously been irradiated with x-ray also showed no appreciable uptake.[40]

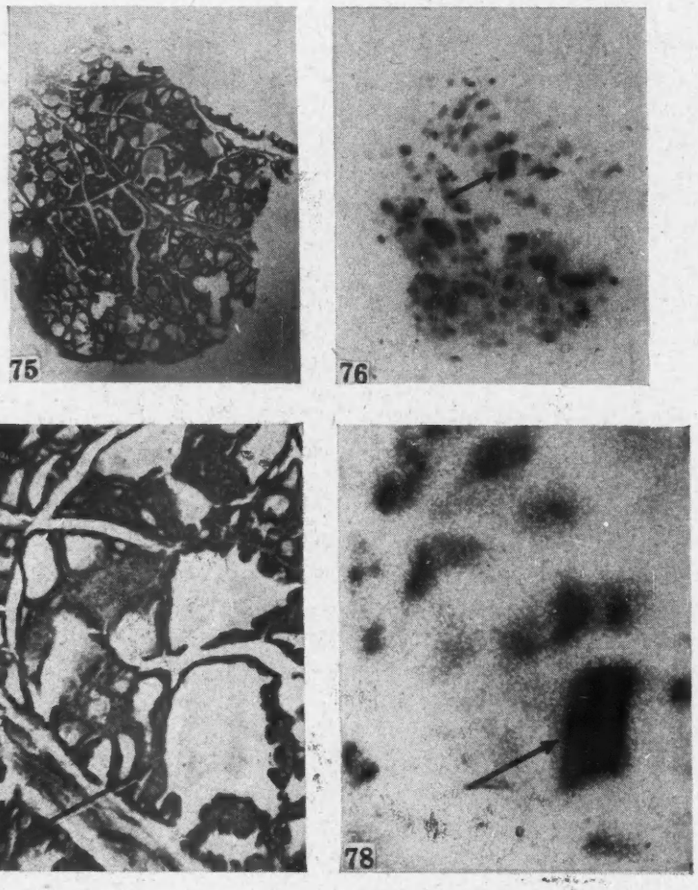
Recently thyroid cancer metastases autographed by Seidlin[51] showed the uptake of radio-iodine clearly. Subsequent treatment with therapeutic dosage of radioactive iodine resulted in an apparent arrest of the disease.



Figs. 71 to 74.—Figs. 71 and 72 show a section and the autograph from the thyroid of a patient with a thyroid adenocarcinoma, showing normal tissue adjacent to the tumour. Figs. 73 and 74 show sections of the adenocarcinoma itself with the persisting normal tissue indicated by the arrows. (J. G. Hamilton, M. H. Soley, K. B. Eichorn, *University of California Publications in Pharmacology*).

ADDENDUM

Since the original draft of this article, it has been possible to obtain autographs of thyroxine in tissues. This has been done by synthesizing thyroxine containing radioactive iodine, and injecting this material in rats. Fig. 83 shows a frozen section of the pancreas which had been covered with emulsion. It may be seen that there is darkening of emulsion over the pancreatic acini. This represents the first autograph of a complex radioactive compound hitherto obtained.



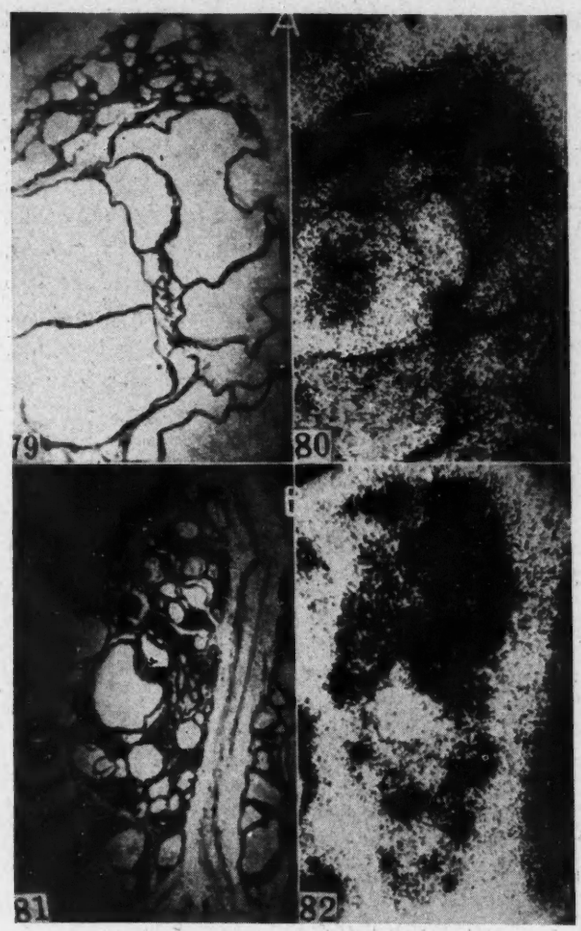
Figs. 75 to 78.—Sections and corresponding radio-iodine autographs of the thyroid of a patient with exophthalmic goitre (basal metabolic rate + 40). Note that the radioiodine is deposited in the colloid. (C. P. Leblond, M. B. Fertman, I. D. Puppel, and G. M. Curtis, *Archives of Pathology*).

CONCLUSION

From the material presented it seems that the autographic method may be of advantage in many forms of biological and clinical investigation. An attempt has been made to survey the literature in this regard with the idea of presenting methods and suggestions for its use in histological investigation.

Very few isotopes have been studied so far: a heavy element, polonium; four elements involved in bone metabolism, phosphorus, calcium, strontium and lead; and an element iodine, specifically connected with the thyroid gland. In the near future, the number of elements traced by the autographic method will probably be much increased, as also the number of substances synthesized from radio-elements and traceable by the same method.

Besides giving a clearer understanding of fundamental biological phenomena, it is hoped that the technique will be of help in discovering specific localizations for various substances and thus finding new possibilities for localized destruction. Clinical applications of radio-elements are fraught with many dangers and



Figs. 79 to 82.—Thyroid sections and radio-iodine autograph from a 12 year old child with myxœdema (basal metabolic rate – 41). Note how the iodine is found mainly in the cells. (J. G. Hamilton, M. H. Soley, W. A. Reilly, and K. B. Eichorn, *American Journal Diseases of Children*).

uncertainties, and should be restricted to elements thoroughly investigated by animal experimentation.

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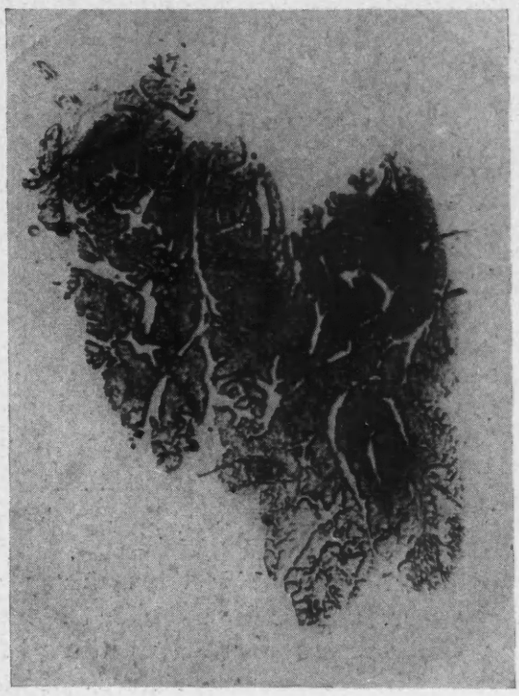

Fig. 83.—Frozen section of the pancreas of a rat treated with radioactive thyroxine. (J. Gross and C. P. Leblond).

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PNEUMOPERITONEUM IN THE TREATMENT OF PULMONARY TUBERCULOSIS[1, 2]

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PULMONARY collapse is the mainstay of active therapy for tuberculosis, and is tried in one form or another on most patients hospitalized with this disease. Methods of collapsing the lung must be varied to meet the condition of the patient, the stage of the disease, the location of the lesion in the lung, and the amount of pulmonary tissue involved. No single method can be applied indiscriminately to all cases, and it is unusual for any case to be benefited by only one method of collapse therapy. More often various methods must be tried in combination or in succession, and sometimes all methods may fail.

Any new procedure by means of which the diseased lung may be put at rest must be tested in many different types of cases before its proper place can be determined in the armamentarium of the collapse therapist. The more usual methods have attempted to collapse the lung directly by introducing air intrapleurally or extrapleurally, or by removing portions of the ribs and allowing the chest wall to fall in on the retracting lung. Operations on the phrenic nerve have long been known, and have found a limited use in certain types of cases.

In general we know the intra-thoracic pressure to be somewhat on the negative side. The intra-abdominal pressure, on the other hand, tends to be somewhat on the positive side, or at any rate not quite as highly negative as the intra-thoracic pressure. The muscular tone of the diaphragm is interposed between the differences in pressure of the abdominal and thoracic cavities and resists, as it were, the upward thrust of the intra-abdominal pressure against the thorax. If the phrenic nerve is interrupted, there is no muscular resistance between the two pressures, and the diaphragm rises in the chest, allowing the lung to collapse to a small extent. This is the basis for the familiar operations on the phrenic nerve in collapse therapy.

The concept of increasing the intra-abdominal pressure by an induced pneumoperitoneum, and thus raising the diaphragm still higher, is not new, but the method has only come into use slowly since it was first advocated by Banyai in 1931. It is evident that if the intra-abdominal pressure is raised to sufficiently high levels by air injections, the diaphragm will rise provided the muscles of the abdominal wall are not so flaccid as to absorb all the increased pressure. If one-half of the diaphragm is paralyzed, either before or after pneumoperitoneum is induced, the air will tend to collect under this paralyzed muscle and raise it to a higher level than the non-paralyzed half. It is evident therefore that with sufficiently high intra-abdominal pressures, collapse of certain parts of both lungs can occur, but that this collapse can be made predominantly unilateral by interrupting the phrenic nerve on one side. Fig. 1 shows an x-ray of the chest before the institution of a pneumoperitoneum and phrenic operation. Fig. 2 shows a rise in the level of both sides of the diaphragm, but the marked increase which occurs on one side by combining this procedure with a phrenic crush. The amount of pulmonary collapse which can be obtained is clearly considerable.

Our first cases of pneumoperitoneum were done at the Grace Dart Home Hospital in 1938.* A total of 42 cases forms the basis for this preliminary report. Before analyzing these cases, it would be well to examine more closely the advantages of this method of collapse therapy. We have already indicated that a measure of bilateral collapse is secured, and that in association with a phrenic operation, considerable unilateral collapse can be obtained. It is true that the familiar pneumothorax procedure might be more desirable in some cases, but this pro-

1. From the Grace Dart Home Hospital, Montreal, Que.
2. Read (in part) at a meeting of the Montreal Clinical Society, February 26, 1947.
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4. Assistant Medical Director, Grace Dart Home Hospital.
5. Assistant Medical Resident, Grace Dart Home Hospital.

* During the war years, Dr. G. A. P. Hurley started several cases.

cedure often fails. In some bilateral cases it is undesirable due to the extent of the disease; in many other cases it is impossible to secure pulmonary collapse because of complete pleural symphysis or inoperable pleural adhesions. Pneumothorax had been tried and found wanting in most of the cases under consideration at present. In the past such cases have had to follow one of two courses: (1) a thoracoplasty or other major operative procedure on the involved side; or (2) sanatorium care only because the disease was too far advanced to consider a major operation. In many cases thoracoplasty is still the method of choice where a simpler measure like pneumothorax, fails, and this is especially true if the cavity is apical. If the cavity is lower down, especially if it is in the mid- or lower-zones of the lung, thoracoplasty becomes less desirable since there are greater chances of failure to close the lesion by this

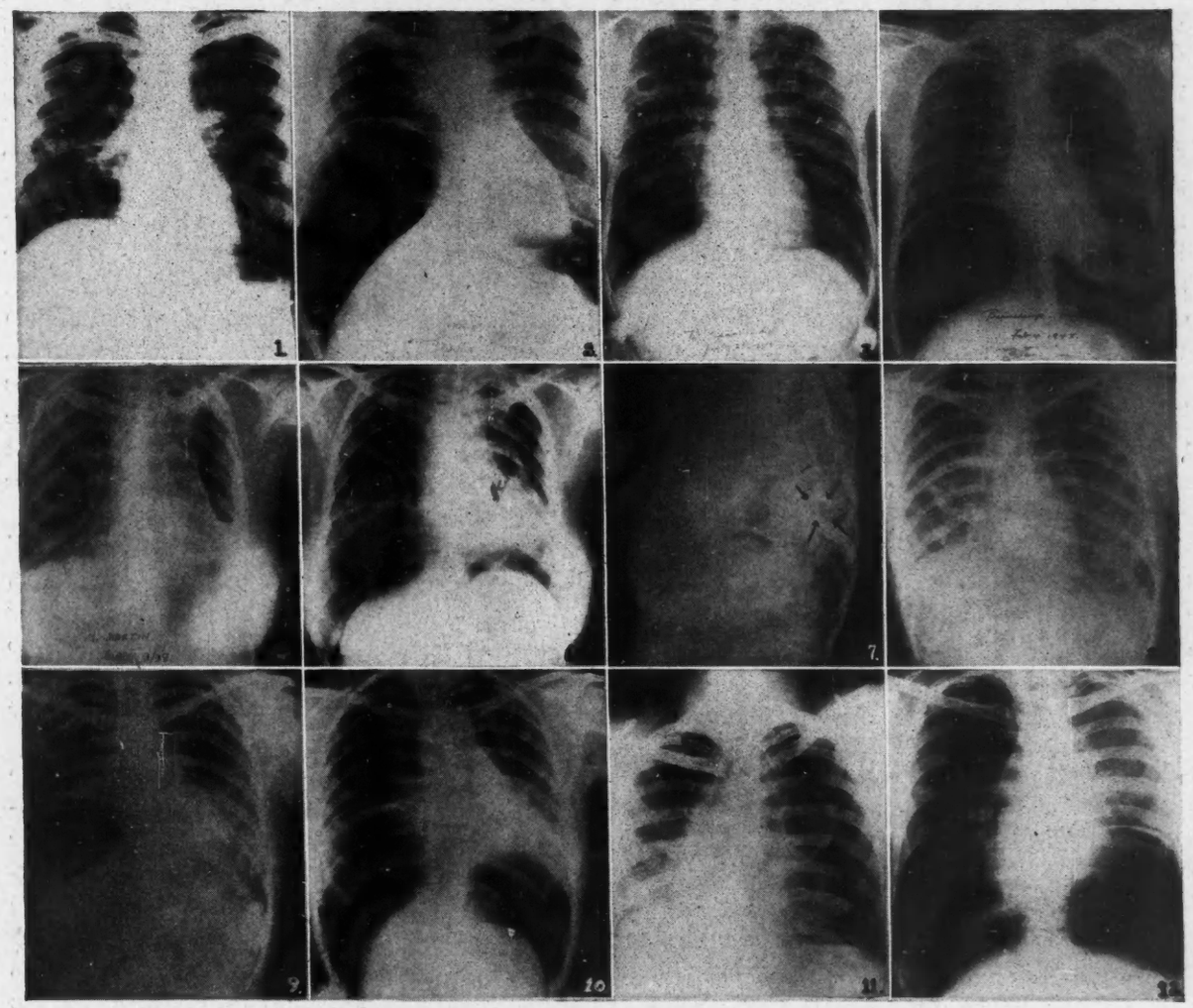

Fig. 1.—Before pneumoperitoneum was instituted. The arrows indicate the cavity. **Fig. 2.**—The same case as in Fig. 1. Pneumoperitoneum has been instituted and a phrenic crush done on the right side. Right hemidiaphragm has risen; the cavity can no longer be seen. **Fig. 3.**—Cavity in the right upper lobe, in the second interspace. **Fig. 4.**—The same case as in Fig. 3 after using a right phrenic crush and pneumoperitoneum. The cavity is now closed. **Fig. 5.**—Two cavities are shown just above the right dome of the diaphragm. A pneumothorax is present on the left. **Fig. 6.**—The same case as in Fig. 5 showing how some cavities fail to collapse with pneumoperitoneum. They are seen below the level of the dome of the diaphragm. **Fig. 7.**—The same case as in Fig. 5. The cavities have not closed because they are placed so far posteriorly as to slip between the ribs and the crura of the diaphragm. **Fig. 8.**—X-ray of Case 2 showing giant cavity on the right side. **Fig. 9.** Case 2.—A pneumoperitoneum and a right phrenic crush have obliterated the original giant cavity but a fresh one has appeared in the right upper lobe. **Fig. 10.** Case 2.—The pneumoperitoneum has been continued but a pneumothorax has been added to control the right upper lobe cavity. **Fig. 11.** Case 4.—Showing a giant cavity with adhesions on the left side. **Fig. 12.** Case 4.—After a left phrenic crush and pneumoperitoneum were done following a complicating effusion.

means. In these mid- or lower-zone lesions, lobectomies have been tried in recent years, but they too seem to be on the way out of favour.

A pneumoperitoneum may be eminently successful in these cases, and may collapse and close a cavity which might otherwise require a major operation. Another advantage of this procedure is that it is reversible, and that the amount of collapse may be controlled by the amount of air injected. It also may be tried for a limited period of time without damage to the lung and with very little danger. If it works, so much the better. If it does not work, the air may be withdrawn or allowed to absorb, and some other procedure tried. One of the disadvantages of pneumothorax has been that if it is long continued it causes pleural thickening and may render the collapsed lung useless in the future. Pneumoperitoneum, because it does not involve the pleura directly, is not likely to cause this eventual failure in lung function.

The relaxation of the lung by pneumoperitoneum is followed by an increased drainage of inflammatory products from cavities and from the bronchial tract. In many cases which, prior to therapy, had a difficult and non-effective cough, pneumoperitoneum was followed by an easy evacuation of sputum with a slight or even effortless cough. As in any surgical inflammatory collection of pus, drainage removes toxicity and thereby improves the patient's general condition. We have observed patients who have a marked basal emphysema which was secondary to a long-standing tuberculosis whose dyspnœa has been relieved by pneumoperitoneum. Obliteration of cavities is purely a mechanical effect attributable to the rise of the diaphragm. To obtain complete healing of these lesions it is necessary that pneumoperitoneum be maintained for an adequate period of time.

Some investigators have raised the objection that pneumoperitoneum cannot give complete rest to the affected lung. This objection may be true, but is just as valid for any collapse procedure. In fluoroscoping pneumothorax cases, for instance, it is uniformly observed that the collapsed lung moves beneath the instilled air. This continuing respiratory function of the lung collapsed by any of the usual procedures has also been proved in both pneumothorax and thoracoplasty cases by the bronchospirometric studies of Jacobaeus, Pinner, and others. The argument that pneumoperitoneum should not be used because it does not put the lung at complete rest cannot, therefore, be taken too seriously.

TECHNIQUE

The technique of air instillation is simple. The initial procedure may require a certain amount of experience, but this is not difficult to acquire. Essentially, it consists of careful local anæsthesia of the abdominal wall at some suitable site—usually in the left lower quadrant —until the peritoneum has been penetrated. Air is then allowed to enter the peritoneal cavity and pressures can be taken with the usual pneumothorax apparatus. The pressures tend to be on the positive side and the respiratory fluctuations are less marked than those in the chest.

Other sites than the left lower quadrant may be chosen for the initial induction and we have used all sites except the right lower quadrant, due to the fear of appendiceal adhesions. When the needle is immediately under the diaphragm, the pressures may tend to the negative side and the fluctuations may be more marked due to the adjacent diaphragmatic movements. Most authorities prefer to avoid the right upper quadrant for fear of penetrating the liver.

The amount of air injected at the initial filling varies from 100 to 700 c.c. Refills in carrying on therapy are usually given at weekly intervals, with amounts varying from 500 to 2,000 c.c. at positive pressures from 5 to 18 cm. of water. The wearing of an abdominal binder helps keep the diaphragm high after refills.

Complications are remarkably few. We have had only one major complication on induction—an air embolism with transient hemiplegia for four days, and subsequent recovery. This occurred in one of our earliest cases. In over 1,200 refills we have had no major complications. A moderate number of cases develop subcutaneous emphysema which is never of any serious moment. This is usually due to a faulty position of the needle. Mediastinal emphysema may occur due to the tracking of air up through the hiatuses of the diaphragm. Most cases complain of pain in the region of the shoulder blades after the first few refills. This is seldom sufficient to cause interruption of therapy.

Some cases develop minor peritoneal effusions which can be disregarded. We have one case with a considerable peritoneal effusion. This is probably due to a pre-existing tuberculous peritonitis, and is not interfering with continu-

ing therapy. It is likely that some cases will develop peritoneal adhesions necessitating cessation of therapy, but we have not run across this complication yet. Any fear of puncturing the bowel has been groundless in our cases so far.

INDICATIONS

So much for the procedure itself. What have been our indications for its use? Roughly speaking, we can divide our types of cases into two large groups. (1) The cases with predominantly unilateral lesions where pneumothorax has failed. In this group the situation of the disease has been such that we considered pneumoperitoneum the next best procedure of choice. These we have called our definitive cases; 23 cases have been treated in this manner and in 19 of them a phrenic crush was done on the side with most involvement. (2) The markedly bilateral cases with a poor prognosis. Here the patients were victims of far advanced disease and they were, for the most part, unsuitable candidates for pneumothorax or thoracoplasty, though in many cases pneumothorax had been tried and found unsuccessful. These patients were on the downgrade, and in most of them, phrenic interruption was not done because it was inadvisable to reduce their impaired vital capacity by an irreversible procedure. It was felt that pneumoperitoneum being reversible, could safely be tried in the presence of a low vital capacity, and could readily be abandoned if dyspnœa or other signs of anoxia appeared.

This second group of cases is again divisible into two: (*a*) The extremely far advanced cases with exceedingly poor prognosis. We have called pneumoperitoneum here "expectant therapy" using the procedure and waiting to see what would happen. We have had 14 cases in this group, and we have used a phrenic operation in only one. (*b*) A group of far-advanced bilateral cases in whom possibilities of major operative procedures could be considered on one side if the other could be got into shape to stand the operation. Here we have labelled pneumoperitoneum "adjunctive therapy", feeling that it was only being used as an adjunct to other collapse measures to be instituted at a later date. We have had only 5 cases in this group, in 2 of whom a phrenic operation was done.

CHART 1.

	Definitive cases		*Adjunctive cases*		*Expectant cases*	
	With phrenic	*Without phrenic*	*With phrenic*	*Without phrenic*	*With phrenic*	*Without phrenic*
Number of cases	19	4	2	3	1	13
Died	1	..	..	..	..	6
Worse	..	..	1	2	1	2
Unimproved	..	1	1	1	..	2
Improved (sputum not changed)	4	..	..	..	..	1
Improved (sputum converted)	14	3	..	..	..	2

CHART 2.

Total number of cases	*Died*	*Worse*	*Unimproved*	*Improved*	*Sputum converted*
42 (100%)	7 (17%)	6 (14%)	5 (12%)	5 (12%)	19 (45%)
	Total unimproved 18 (43)%			Total improved 24 (57%)	
Definitive cases 23 (100%)	1 (4%)	0	1 (4%)	4 (17%)	17 (74%)
Other cases 19 (100%)	6 (32%)	6 (32%)	4 (21%)	1 (5%)	2 (10%)

Charts 1 and 2 show our results in these groups of cases. It will be seen that in bilateral cases the results have not been strikingly good. However, since these are cases with a hopeless prognosis, even slight encouragement justifies us in continuing therapy.

In the predominantly unilateral group the results are strikingly good, insofar as there has been a high percentage of sputum conversion. Of course, these cases have not been followed to complete cure yet—that will take years—but we can see no reason why the sputum should not continue negative once it has become so. It is merely a matter of keeping on with the original therapy until the disease is healed.

In these cases the location of the lesion is important. Broadly speaking, the lesion should be in the mid- or lower-zone, and situated in the central or anterior part of the lung. In

this connection we might state that upper lobe lesions often appear to be in the mid-zone on the flat film, as illustrated by 9 cases in our definitive group with the lesions in the upper lobes. All of these cases were improved, and in 8 of them the sputum was converted from positive to negative. Even lesions in the first interspace may respond favourably to this type of therapy. Figs. 3 and 4 illustrate a lesion high in the lung and its improvement with a good pneumoperitoneum. Lateral figures or tomograms are desirable as basal posterior lesions may not collapse. Figs. 5, 6 and 7 show how such lesions may slip behind the crura of the diaphragm and remain patent.

In our experience, indications for pneumoperitoneum have been: (1) Moderately advanced bilateral pulmonary tuberculosis where artificial pneumothorax can not be given. (2) Cases of unilateral pulmonary tuberculosis in which pneumothorax is indicated but can not be carried out due to adhesions, age of the patient, or other serious complication. (3) To supplement a phrenic crush where a phrenic crush has failed to produce the desired effect. (4) As an adjunct to artificial pneumothorax in selected bilateral cases. (5) As a preliminary measure in early bilateral cases of pulmonary tuberculosis to render the patient suitable for other methods of collapse therapy later on. (6) Basal lesions in the lung with or without cavitation.

The results which may follow the use of pneumoperitoneum are illustrated in the following cases:

CASE 1

M.B., aged 26, first learned that he had pulmonary tuberculosis in 1944 when he was rejected by the Army. He received no active therapy until admission to the Grace Dart Home Hospital in July, 1946. Examination at this time showed bilateral far-advanced pulmonary tuberculosis with a 2.5 cm. cavity in the right upper lobe. Sputum was positive for tubercle bacilli. There was intermittent low grade pyrexia.

In August, 1946, right pneumothorax was induced. The sputum became negative in September. In spite of conversion of sputum, pneumothorax had to be abandoned in October because of extensive inoperable pleural adhesions. Pneumoperitoneum was induced in October 1946 and a right phrenic crush was done in November, 1946. Pneumoperitoneum has been continued to date with 800 to 1,500 c.c. of air given at 7 to 14 day intervals. Clinical improvement has been satisfactory, sputum has been negative consistently since September, 1946.

CASE 2

Miss M.I., aged 22, had a hæmoptysis in May, 1944. Examination in July 1944 revealed bilateral far advanced pulmonary tuberculosis. Sputum was positive. On admission to the Grace Dart Home Hospital in August, 1944, it was found that there were abnormal shadows in both lung fields. There was a giant cavity in the apex of the right lower lobe (Fig. 8). General condition was good. In October, 1944 a right phrenic crush was done. A pneumoperitoneum was induced in August, 1945. It is to be noted that sputum was converted in January, 1945, and has remained negative to date. We feel that pneumoperitoneum has produced greater relaxation of the involved lung and thus gives greater assurance of final healing. Pneumoperitoneum refills are being continued at approximately weekly intervals in amounts between 1,000 and 1,500 c.c. The phrenic nerve has been crushed twice since October, 1944 (Figs. 9 and 10).

CASE 3

In June, 1946, D.P., aged 19, was found on routine examination to have pulmonary tuberculosis. There was extensive disease in the right lower lobe with cavitation in the apex of this lobe (Fig. 1). The sputum was positive. He was afebrile and his general condition was excellent. Patient was admitted to the Grace Dart Home Hospital in July, 1946, when a right phrenic crush was done and pneumoperitoneum was induced (Fig. 2). Treatment has been well tolerated. The sputum has been consistently negative since July, 1946. Refills of 1,000 to 15,000 c.c. of air have been given at 7 to 14 day intervals.

CASE 4

The onset of pulmonary tuberculosis in J.C., aged 34, appears to have been in 1943. On admission to the Grace Dart Home Hospital in December 1944, patient had a left pneumothorax which was complicated by a band of adhesions (Fig. 11). There was a 4 cm. cavity in the upper part of the left lung. There were abnormal shadows throughout the right lung. Sputum was positive. Closed pneumonolysis was done in December, 1944. In spite of an apparently successful operation, extensive pleural effusion developed. Pneumothorax was discontinued and in May, 1945 a left phrenic crush was done. Pneumoperitoneum was induced in August, 1945. Pneumoperitoneum refills of 1,200 to 1,800 c.c. of air have been given at 7 to 14 day intervals (Fig. 12). It has been necessary to repeat the phrenic nerve crush twice. Sputum became negative in April, 1945, and has remained negative to date. He has been continuing therapy as an out-patient since July, 1946. In November, 1946, he had a slight peritoneal effusion discovered by x-ray which cleared spontaneously in three months and did not interfere with the maintenance of therapy.

CASE 5

In 1943, M.L., aged 27, consulted a physician because of weight loss and easy fatiguability. Bilateral pulmonary tuberculosis with a giant cavity in the apex of the left lower lobe was found. He was admitted to the Grace Dart Home Hospital in February, 1946. At this time there had been apparent arrest of the disease on the right side. The cavity on the left side had remained in spite of prolonged bed rest and pneumothorax, which was complicated by several inoperable adhesions. Sputum was positive. Temperature was normal, and general condition good. In March, 1946, a cavernostomy was performed and the cavity in the left lower lobe was drained by open drainage. In March, 1946, pneumoperitoneum was induced following the cavernostomy. A left-sided phrenic crush was performed in May, 1946. The sputum became negative in May, 1946, and remained so until January, 1947. At this time a lesion in the left upper lobe which appeared to be breaking down was thought to be responsible for the positive sputum. To date there has been no evidence of residual cavitation in the left lower lobe. It is likely that some other form of collapse will be required for the lesion in the left upper lobe.

In conclusion we feel that there are definite benefits to be derived from the use of pneumoperitoneum therapy and that by its means col-

lapse of tuberculous lesions can be secured and sputum converted in selected patients who would otherwise die or require extensive major surgery.

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INFLUENZA IN NORTHERN NEWFOUNDLAND*

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A ROADLESS community, shut off from outside contact save by the to and fro of occasional dog-teams, offers for the study of epidemic disease facilities not found amongst densely populated areas served by modern communications.

When the influenzal stream of 1945-46 struck this part of Newfoundland, the St. Anthony Hospital, serving the entire northern peninsula of the island, was well placed to observe its flow from beginning to end. After the last mail-boat leaves in December or early January the resident populations of the northern settlements remain unchanged throughout the freeze-up; dog-team communication between villages a few miles apart is kept up, but longer journeys are almost confined to those occasioned by the three emergencies of accident, sickness or death. Perhaps twice a winter the drone of wings is heard over St. Anthony, and the *Norseman*, a ski-equipped plane belonging to the government, comes in to land on the harbour with a fresh batch of medical supplies. Otherwise, on all this coast, isolation from the rest of the world is unbroken from January until the end of June.

An epidemic virus, arriving here from some crowded city, finds itself among unprotected hosts, poor for the most part and often underfed. Houses are thinly built, and wood, the only fuel, has often to be fetched five to seven miles by dog-team. In December and January, 1945-46, three-quarters of the dogs of northern Newfoundland died of distemper; as a result many hearths were cold. Pulmonary tuberculosis is three times more frequent than in Canada. Though temperatures seldom go excessively low, humidity gives the cold a very penetrating quality. Thus it is not surprising that the virus of influenza, arriving in an atmosphere of "35-below" on the coldest day of the year, was received with even more than the usual large slice of hospitality associated with the people of this coast.

An account of the arrival, clinical behaviour, spread and disappearance of the epidemic in the town of St. Anthony forms the basis of this article. A community of a thousand people, the largest in the peninsula, the town had been visited by no epidemic of comparable magnitude since the pandemic of 1918. The tabulated figures are confined to the township itself, but mention is made of the clinical features of other cases, brought into hospital from elsewhere or seen on the winter medical journeys, as well as those who contracted the disease whilst in hospital for other causes.

The *S.S. Kyle* came butting through the harbour ice on January 14, 1946, on a special late trip extra to schedule. A few minutes after she tied up I was examining our local Ranger—as the Newfoundland police are called—returned home from St. Johns with high fever and pain in the back. (His illness was doubly unfortunate in that a fight had just taken place on the boat and, being weakened by fever, he had been unable to check it. Later I was able to provide evidence of his condition to silence the indignant protest of the defeated combatant!)

In the next five weeks, between January 14 and February 19, when the last case went down, 735 of the 946 people of St. Anthony contracted the malady. The ensuing tables are self-explanatory. Of the 168 family groups the residents of the Grenfell Hospital and of the Orphanage were the two largest and are shown separately. Hospital cases, except those from

TABLE I.

Group	*Population*	*Bed cases*	*Ambulant*	*Total*	*%*
St. Anthony.....	946	563	172	735	82
Hospital and Orphanage—adult staff.....	39	31	1	32	82
Orphanage children —all ages to 21...	62	56	0	56	89
Returned from Europe in the past 6 months.....	22	2	0	2	9

The 22 returned personnel consisted of 18 servicemen, 1 woman, 3 children. Both the cases were servicemen.

* From the International Grenfell Association Hospital, St. Anthony, Nfld.

TABLE II.

ACUTE COMPLICATIONS IN ST. ANTHONY
Total cases 735. Deaths 0.

Otitis	96
Epistaxis	24
Laryngeal croup	3
Acute multiple arthritis	2
Convulsions	1
Diabetic coma	1
Broncho-pneumonia	5
Lobar pneumonia	4

One plus empyema; one plus abortion.

St. Anthony itself, are omitted, although the epidemic swept the wards so thoroughly that scarcely a patient escaped.

GENERAL EPIDEMIOLOGICAL FEATURES

These were: an incubation period of one to three days; a rapid onset of pain in the back, fever and coryza; a white count that remained normal or subnormal throughout; a fall of temperature at the end of seven days; and a convalescence marked by weakness and by a varying degree of mental depression, returning slowly to normal over sometimes many weeks. No age-group was exempt. Young children nearly all got it, but very mildly and without after-effects; young adults were hardest hit; old people very lightly—if they did not get pneumonia.

The percentage affected, 82, was an average figure for the whole region. That the people of this isolated coast lack immunity to the commoner city-bred viruses is borne out by the escape rate of over 90% of St. Anthony's veterans.

Andrewes has described the incidence of the 1945-46 epidemic in Great Britain and Australia as patchy, high in school children, very little in adults, noticeably little in the army. So far as adults go this was not the case here, where it is probable the epidemic more closely resembled the American or Canadian one from which, via St. Johns, it presumably sprang. In the latter city the epidemic was quite mild and reached its zenith at Christmas, just when the *Kyle* sailed for the north. Enquiries made in New York, New Jersey, Nova Scotia, Ontario and Alberta suggest that the epidemic was uniformly mild almost to triviality throughout the continent of North America, and it seems possible that Northern Newfoundland suffered worse than anywhere else this side of the Atlantic.

The general picture of this epidemic can be summed up as an acute, febrile illness lasting a week with a depressingly long convalescence.

COMPLICATIONS

Table II expresses the complications in St. Anthony. Otitis externa and media, and epistaxis were so common as to be almost part of the disease. The 8 cases of pneumonia were all treated with either penicillin or sulfa-drugs; all were women; 4 were lobar and 4 broncho-pneumonia. Of the lobar pneumonias whose ages were 17½, 20, 22, 29, one was uncomplicated, one had a thin sterile pleural effusion for several weeks, one aborted at the seventh month of pregnancy and the last—also seven months' pregnant—after a critical acute stage crossed by a small margin and the aid of penicillin, developed a subacute but debilitating empyema cultured repeatedly as a pure growth of *Staph. aureus*. She was normally delivered of a full-term living child, but subsequently had to have a rib-resection and was altogether in hospital for six months. The broncho-pneumonias were a different story. Here their ages were 44, 50, 56, 71; all but the first were bilateral; all responded well to treatment and ran a relatively benign course. There were two cases of pleural effusion occurring 2 or 3 weeks after 'flu; a boy of fourteen and a girl of twenty. Both effusions were sterile, the possibility of an acid-fast lesion being investigated through ensuing weeks in each case with negative findings.

Among complications in the districts outside St. Anthony was one case of encephalo-myelitis; a schoolboy who, after losing all power of speech and locomotion with severe mental changes, made a progressive recovery and was almost well when last seen seven months after the attack. Chronic heart lesions, previously under control, were greatly aggravated by the epidemic, often becoming so decompensated that restoration was difficult and prolonged.

RELATION TO PHTHISIS

The real and lasting damage done by the epidemic on this coast was to tuberculous subjects and to those others, exposed by environment to tuberculous infection, whose resistance already trembled in the balance. There were in St. Anthony hospital at the time 20 patients with phthisis. These are not tabulated, but every one of them had 'flu: two died within a

week or two; their previously well-controlled lesions accelerating rapidly to an irrevocable landslide. The remainder all deteriorated markedly. In this country the crude tuberculosis death rate is 140/100,000, three times that of Canada or the United States, and all through spring and summer we were admitting to hospital and discovering in our visits new cases of tuberculosis who "had never been right since the 'flu". The full tale of this unholy alliance between acid-fast bacillus and influenza virus cannot be told.

DEATHS

There were no deaths in St. Anthony, where the 8 cases of pneumonia received prompt hospital care. When this was not possible deaths occurred, being numerous in the Strait of Belle Isle area, where people are poorest, most overcrowded and separated from hospital by seventy or eighty miles of frozen waste.

Northern Newfoundland

SPREAD

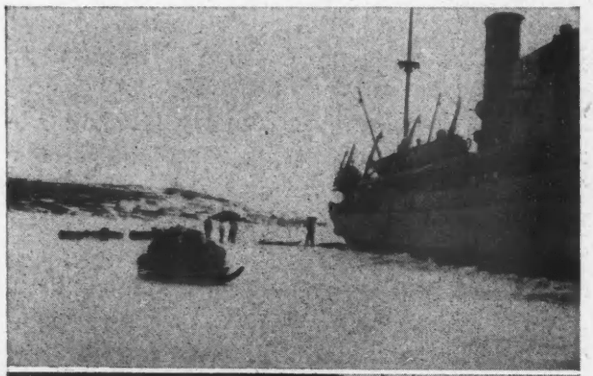
From the steamer's ports of call the epidemic spread surely but with varying speed to every northern settlement—there are 110 between Ferrole Point and La Scie—except four. It was not until the end of April that the last cases went down. The map gives a rough idea of how the epidemic spread, if it is borne in mind that there are no road communications and that the population represented is around 12,000 strung out along 500 miles of coastline in the 110 villages mentioned.

The four places which escaped were Fishot Island, its neighbour Harbour Devoux, Gray Island and Little Harbour Deep. The log of the *Kyle* relates how, on January 14, she made repeated efforts to land freight at Fishot but failed owing to blizzard and storm. Harbour Devoux, a settlement of only two houses, is on the mainland immediately adjacent to Fishot Island: later in the year I stayed a night at this isolated spot, in a house so poor that the only foodstuffs were white bread and tea, without sugar, milk or margarine. Isolation protected these places, as also the settlement of Little Harbour Deep in White Bay. This latter is a village of ten families where the steamers never call, locked away deep in a fiord by icy cliffs a thousand feet high. The only visitors that winter were a nurse from the north and an occasional dog-team mail. The people here are extremely parochial and unenterprising so that on a summer visit I was unable to get any information about the river at the bottom of their fiord, since no one had ever explored its lower reaches; and in winter they seemed never to essay the steep trails leading to their nearest neighbours ten miles away, or indeed to go out at all except at the bidding of necessity or emergency.

The Gray Island was a different story. Here the steamer called, landing two men from St. Johns who did not go down with 'flu. This island is one of the most prosperous places on the whole coast; complete winter isolation combined with excellent standards of health and living make it an inhospitable lodging-house for viruses and their kind. Here also they escaped the other epidemic—that of dog-distemper—which hit the coast that year, killing thousands of the animals on whom depends the whole burden of travel and constituting a disaster second only to the 'flu. The latter was widely held to be in fact the dog-sickness transferred to his master, though a rival school blamed sun-spots.

In many of the northern settlements spread was even more complete than at St. Anthony. At Raleigh, for instance, the 300 inhabitants considered that none of their number escaped.

To Labrador the virus—or perhaps his twin brother—came overland from Quebec. By the time the *Kyle* reached the coast navigation in the straits had closed and there was no further contact between Newfoundland and Labrador.



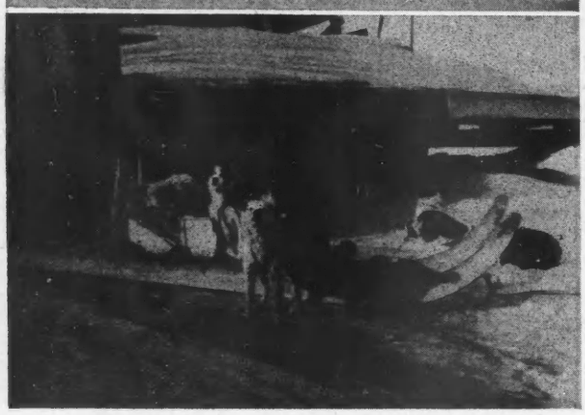


Fig. 1.—Mail boat unloading on the ice.
Fig. 2.—A typical dog team.

DISCUSSION

Having in mind the two epidemiological theories of the cause of influenza we may ask whether it was the virus itself which the steamer brought, or some other agent able to change or activate an upper-respiratory virus already latent amongst these people.

This epidemic had almost all the features of arrival and spread described by Peter Ludvig Panum with reference to repeated influenza epidemics in the Faroes. An observer 17 years resident in the Faroes told Panum in 1846 that their typical 'flu epidemics invariably broke out after the arrival of a trade-ship, irrespective of whether anyone on board was sick, and Panum himself witnessed one such epidemic that year. He says that the relationship to ship arrival cannot be coincidental, making the points that the epidemics occurred whatever time of year the ships came, though more often in the autumn, and that they spread from the dock-workers through the port clerks to the rest of the town and thence to the rest of the community. He quotes too the "queer, familiar fact" of St. Kilda, an island in the outer Hebrides, having similar epidemics "every time a ship arrives".

With reference to the measles epidemic which it was Panum's main work to investigate, Hare and Mackenzie say: ". . . it is highly improbable that any latent virus was present before the epidemic began. For all the cases were traceable to other cases, and isolated households remained free until contact with cases was established. On the other hand in a large town the virus may well survive from one epidemic to the next in individuals scattered here and there." The last sentence is of interest since after the Newfoundland epidemic there was a number of reports of a second attack amongst persons who had had 'flu 2 to 3 months earlier. Otherwise the above quotation would appear to cover the situations described.

SUMMARY

A brief account is given of the 1945-46 epidemic of influenza in northern Newfoundland. The general background was one of isolation, cold weather, poverty, malnutrition and tuberculosis. Isolation made observation easy and, because of low immunity levels, dissemination widespread. In contrast to incidence, which affected all ages and types, virulence appeared to vary directly with poverty and malnutrition. The arrival of the disease by mail-steamer from an infected area and subsequent spread from her ports of call were circumstantially proved, though no bacteriological typing could be done. It is reasonable to assume that the whole area by reason of its winter fastness would have escaped but for this last boat. No cases were seen except those with traceable direct contact with the epidemic. The association of *M. tuberculosis* accounted for the greatest harm wrought by the virus in these localities. Enquiries elsewhere in the island and on the mainland suggest that the epidemic in northern Newfoundland was more severe than was characteristically the case elsewhere in North America.

I wish to thank Dr. John Wyllie, Professor of Preventive Medicine at Queen's University, for his helpful and kindly criticism and Miss Cinderella Hodge of St. Anthony for the useful data she collected at the time of the epidemic.

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THE USE OF STREPTOMYCIN IN NON-TUBERCULOUS URINARY TRACT INFECTIONS*

(Preliminary Report)

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THE majority of urinary tract infections are due to Gram-negative bacteria. Prior to the use of streptomycin the results of treatment were only moderately satisfactory. In many instances it was impossible to get rid of the infecting organism entirely. The present study deals with 35 cases of urinary tract infection which were treated with streptomycin. Four patients had a second course of treatment. Sulfathiazole was used along with the streptomycin in many of the cases in an endeavour to determine if drug synergism occurs *in vivo* as it does *in vitro*,[9] and if by using the two drugs in combination one could prevent the organism from developing resistance to the streptomycin. Cases were selected which failed to respond to the usual forms of treatment, *e.g.*, mandelic acid, uromand, urotropin, sulfathiazole, sulfadiazine, penicillin, etc. The one essential criterion was that the urine contain one or more Gram-negative organisms sensitive *in vitro* to streptomycin.

Technique

Specimens of urine for culture were collected by catheterization in the female, and usually as voided specimens in the male. No actual bacterial counts were carried out, although approximate numbers of colonies were noted. Cultures were made on blood agar and Chandelier's medium to suppress spreading growth, and thioglycollate broth. Lacking wholly satisfactory means of neutralizing streptomycin, recourse was had to dilution of urines containing the antibiotic.

Streptomycin tolerance of bacteria was determined by making dilutions of the antibiotic in standard laboratory infusion broth, inoculating approximately 1 million organisms from a 24-hour broth culture, and incubating the cultures 24 hours.

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In this preliminary series we did not determine urine or blood levels of streptomycin because of dissatisfaction with the techniques available. The clinical results which were our chief objective we feel to be none the less valuable, and correlation with subsequent studies will not be materially handicapped.

Clinical Reports

The majority of the cases treated were given 10 grams of streptomycin in doses of 0.15 to 0.25 gm. intramuscularly every three hours, and along with this sulfathiazole or sulfadiazine—gr. 7½ orally four times a day. In attempting to analyze the results, we have divided the cases into 4 groups according to the apparent clinical result achieved, regardless of the bacteriological result. These groups are:

1. Clinical cure permanent	16
2. Clinical cure with recurrence	2
3. Clinically improved but not cured	13
4. Cases requiring a second course of streptomycin	4
	35

All cases treated showed a streptomycin-sensitive organism. There were 8 females and 27 males treated. Sex did not appear to be a factor in the response to treatment.

Group I.—Sixteen cases (45%) fell into the group of permanently cured. The dosage of streptomycin, sulfathiazole, and the infecting organism are shown in Table I.

It is interesting to note that each of the 16 cured cases was what might be termed a straightforward simple case of infection, *i.e.*, they were not complicated by urinary obstruction, calculi, or foreign bodies such as indwelling urethral catheters, ureteral catheters or suprapubic tubes, with the exception of case 34, in which there was a 3 months' pregnancy. At the end of streptomycin therapy her urine was sterile. Two months later her symptoms returned and the urine was again infected. For the purposes of this study she should be regarded as a cured case.

Group II.—There were two cases that showed clinical improvement and a sterile urine temporarily. Relapse occurred in one to two weeks after the completion of therapy, and in the other 3 days after the completion of therapy. These cases are shown at the end of Table I. Case 1 had pemphigus with multiple abscesses over the body. She was given 10 gm. of streptomycin and 10 gm. of sulfathiazole. Clinically she was

Table I.

Urinary Tract Infection Cured—16 Cases (45%)

Case No.	Age Sex	Diagnosis	Bacteria present before streptomycin therapy	In vitro sensitivity: streptomycin required for inhibition of organisms	Dosage				Blood level mgm. %	Urine level mgm. %
					Streptomycin total	Grams per dose q. 3 h.	Route	Sulfathiazole Sulfadiazine		
2	50 F.	Pyelonephritis, rt. Hydronephrosis, bilateral. Adenocarcinoma of rectum.	E. coli	8 units per c.c.	5 grams	0.25	I.M.	None		
5	37 F.	Pyelonephritis, bilateral. Hydronephrosis, bilateral.	E. coli	64 units per c.c.	5 grams	0.25	I.M.	None		
7	22 M.	Pyelonephritis, bilateral. Hydronephrosis, bilateral (congenital). Very low kidney function.	E. coli	128 units per c.c.	8 grams	0.25	I.M.	None		
8	82 M.	2-stage suprapubic prostatectomy. Postoperative cystitis.	Achromobacter A. Aerogenes	8 units per c.c. 8 units per c.c.	5 grams	0.25	I.M.	S.T. 4.5 grams		
16	26 F.	Nephropexy, rt. Cystitis, chronic (postoperative).	Streptococcus fæcalis		4 grams	0.20	I.M.	None		
18	56 M.	Diverticulum of bladder. Benign overgrowth of prostate.	A. Aerogenes	64 units per c.c.	10 grams	0.20	I.M.	S.D. 4.5 grams	4.0	80
19	38 F.	Double renal pelvis and double ureter, rt. Nephroptosis, rt. Cystitis, chronic.	B. Proteus A. Aerogenes		10 grams	0.25	I.M.	S.D. 5 grams		
20	63 M.	Two stage suprapubic prostatectomy. Postoperative cystitis.	A. Aerogenes Pyocyaneus	64 units per c.c. 128 units per c.c.	10 grams	0.20	I.M.	S.T. 5 grams		
25	41 F.	Nephrectomy, left, postoperative 1 year. Pyelonephritis, right.	Late lactose fermenters		7.5 grams	0.25	I.M.			
27	67 M.	Two stage prostatectomy. Postoperative cystitis. Diabetes mellitus.	A. Aerogenes. Pseudomonas. Proteus	16 units per c.c. 32 units per c.c. 256 units per c.c.	10 grams	0.20	I.M.	S.T. 5 grams		
28	24 M.	Plastic repair of hypospadias. Suprapubic cystotomy.	Proteus	64 units per c.c.	6 grams	0.25	I.M.	S.T. 5 grams		
29	60 M.	Cystitis following trans-urethral resection.	Aerogenes	50 units per c.c.	10 grams	0.50	I.M.	S.D. 6 grams	2	90 to 128
31	54 M.	Nephrectomy, left, 2 years postoperative. Cystitis chronic.	Enterococci, Lancefield D.	500 units per c.c.	6 grams	0.25	I.M.	None		
32	51 M.	Carcinoma of bladder, postoperative. Cystitis, acute.	A. Aerogenes	50 units per c.c.	10 grams	0.50	I.M.	S.D. 6 grams	4.1	120
34	25 F.	Pregnancy, 3 months. Pyelonephritis, bilateral.	E. coli. Enterococci, Lancefield D.	64 units per c.c. 256 units per c.c.	10 grams	0.25	I.M.	S.D. 6 grams		
35	42 M.	Pyelonephritis, rt., acute. Cystitis, acute.	E. coli	20 units per c.c.	10 grams	0.50	I.M.	S.D. 9.5 grams	5.9	175

Table I.—*Continued*

Group II.—Urinary Tract Infection Cured, with Recurrence,—2 Cases

Case No.	Age Sex	Diagnosis	Bacteria		In vitro sensitivity		Streptomycin total	Sulfathiazole	Blood level
			Before therapy	After therapy	Before therapy	After therapy			
1	50 F.	Pemphigus. Cystitis, acute.	Proteus Pseudomonas A. Aerogenes	(2 weeks) Pseudomonas A. Aerogenes			10 grams	10 grams	
3	56 M.	Suprapubic cystolithotomy, 1 year postoperative.	A. Aerogenes	(3 days) A. Aerogenes	8 units per c.c.	8 units per c.c.	2 grams 0.25 grams q. 3 h. I.M.	S.T. 8 grams	1.7 mgm. %

very much improved. During the two weeks that the urine was sterile, culture of the abscesses on the body — which had previously shown *B. proteus*—was sterile. Relapse occurred 2 weeks later. The organisms obtained from the urine (*A. aerogenes* and *pseudomonas*) were the same as those originally found.

Case 3 had a suprapubic cystolithotomy and cold punch resection of the bladder neck in December, 1945. A mild cystitis due to *A. aerogenes* had been present ever since. After 2 gm. of streptomycin and 8 gm. of sulfathiazole he showed a sterile urine on culture for 3 successive days, at the end of which time *A. aerogenes* was again found. The sensitivity of this organism was identical to the *A. aerogenes* of the original culture, *i.e.*, resistance to streptomycin had not been induced by treatment. The small total dosage of streptomycin given was probably inadequate for a permanent cure.

Groups III and IV.—Group III, in which there was some clinical improvement, but in which a sterile urine was not obtained; and Group IV, which was similar to Group III, except that a second course of streptomycin was given, totalled 52% of the cases.

The findings in Group III are shown in Table II, and Group IV in Table III.

Groups III and IV contained 5 cases (Nos. 4, 10, 15, 21, 22) that were uncomplicated by urinary obstruction, calculi, etc., and in which one would have anticipated a cure, thereby placing them in Group I. The remaining 12 cases showed complicating factors such as calculi in the kidney or ureter, in 4; indwelling catheter, suprapubic tube or ureteral splint in 6; prostatic obstruction in 2. It would seem reasonable to believe that the complicating factor (calculus, tube, etc.), was the explanation of why a cure was not obtained. Against this argument is the fact that one-third of all the failures had no demonstrable complication.

In seeking a common denominator to explain the failures the bacteriology has been carefully reviewed. This shows the most bizarre features. In 7 of the 17 cases not cured, the organisms obtained at the end of treatment were entirely different to those obtained at the commencement of treatment. The explanation of why there are such profound changes in the flora is unknown. There is clinical significance in that the appearance of new organisms during streptomycin therapy may necessitate a change to or the addition of penicillin.

In 3 of the remaining 11 failures (*i.e.*, in which the flora did not change), sensitivity tests were carried out on the surviving organism. In each of these three cases sulfathiazole was given along with the streptomycin. In case 3 the sensitivity of the surviving organism was unchanged. In case 26 it was only slightly increased. In case 23 the organism (*B. proteus*) was resistant to 256 units of streptomycin both before and at the end of treatment. The end point of resistance was not determined. It has been established *in vitro*[9] that when sulfathiazole is combined with streptomycin the organisms do not develop resistance to the streptomycin. So far we have not been able to establish this clinically, although the 3 cases quoted are suggestive that this may occur *in vivo*.

Cases 10 and 26, with organisms highly sensitive to streptomycin, are good examples of the fact that the organism will not necessarily be eliminated by giving a so-called "adequate" dose of streptomycin. The *in vitro* sensitivity and a high blood level of streptomycin are not reliable indices to the response of the organism *in vivo*.

Table II.

Group III.—Cases Clinically Improved but not Cured—13

Age No.	Sex Age	Diagnosis	Bacteria present before streptomycin therapy	In vitro sensitivity: streptomycin required for inhibition	Bacteria present after streptomycin therapy	Streptomycin total	Dosage			Blood level mgm. %	Urine level mgm. %
							Grams per dose q. 3 h.	Route	S.T. S.D.		
4	72 M.	Closure of suprapubic fistula foll. two stage suprapubic cystotomy. Diabetes mellitus.	B. Proteus		B. Proteus Staphylococcus.	10 grams	0.25	I.M.	None		
6	41 M.	Fracture of jaw, pelvis and sacrum, Rupture of urethra. Suprapubic cystotomy. Renal calculi.	B. Paracolon Mucoid coli	128 units per c.c. 256 units per c.c.	Pseudomonas (resistant to 256 units)	14.5 grams	0.25	I.M.	21 gms.	.08	68
10	43 M.	Pulmonary TBC healed. Chronic cystitis—18 years' duration.	E. coli Indifferent streptococci	16 units per c.c.	Pseudomonas Enterococci	10 grams	0.25	I.M.	15 gms.	1.5	100
11	45 M.	Ureteral calculus, small, lt.	A. Aerogenes	8 units per c.c.	Micrococci Diphtheroids	7.5 grams	0.25	I.M.	7 gms.		
12	67 M.	Benign overgrowth of prostate. Uræmia. Suprapubic cystotomy.	A. Aerogenes B. Paracolon	64 units per c.c. 32 units per c.c.	B. Paracolon	5 grams	0.25	I.M.	None		
13	50 M.	Nephrectomy, left. TBC. 33 years ago. Double renal pelvis and double ureter, rt. Chronic prostatitis. Stricture of urethra. Chronic cystitis.	(Prostatic fluid) Staph. pyogenes Diphtheroids. A. Aerogenes *Urine* Staph. pyogenes		(Prostatic fluid) Micrococci *Urine* No growth	10 grams	0.25	I.M.	None		
15	45 F.	Cystitis, chronic 20 years. Hysterectomy 3 years ago. Diverticulectomy, bladder, 2 yrs. ago	E. coli	50 units per c.c.	E. coli	5 grams	0.25	I.M.	None		
17	24 M.	Plastic operation on right kidney. Ureteral splint *in situ*.	B. Proteus Pseudomonas Coliforms	256 units per c.c.	A. Aerogenes B. Proteus	10 grams	0.25	I.M.	None		
21	35 M.	Renal calculi, bilateral, postoperative. Pyelonephritis, bilateral. Cystitis, chronic.	B. Pyocyaneus	32 units per c.c.	B. Alkaligenes fæcalis	10 grams	0.375	I.M.	S.D. 12 grams		
22	27 M.	Acute hæmorrhagic cystitis. Urinary retention. Urethral stenosis, mild.	A. Aerogenes	16 units per c.c.	Indifferent Streptococci	10 grams	0.25	I.M.	S.D. 12 grams		
24	66 M.	Nephrectomy, left, 10 yrs. ago. Renal calculus, Staghorn, right.	E. coli	256 units per c.c.	A. Aerogenes (sensitive to 256 units per c.c.) Late lactose fermenter (sensitive 256 units per c.c.)	8 grams	0.25	I.M.	None		

Table II.—*Continued*
Group III.—Cases Clinically Improved but not Cured—13

Age No.	Sex Age	Diagnosis	Bacteria present before streptomycin therapy	In vitro sensitivity: streptomycin required for inhibition	Bacteria present after streptomycin therapy	Streptomycin total	Dosage: Grams per dose q. 3 h.	Dosage: Route	Dosage: S.T. S.D.	Blood level mgm. %	Urine level mgm. %
30	62 M.	Two-stage suprapubic prostatectomy. Cystitis, postoperative.	A. Aerogenes B. Proteus	20 units per c.c. 20 units per c.c.	Paracolon (sensitive to 500 units per c.c.)	10 grams	0.50	I.M.	S.D. 6 grams	4.6	135
33	64 M.	Two-stage suprapubic prostatectomy 2 years previous. Bladder neck obstruction.	Aerogenes Diphtheroids Micrococci	64 units per c.c.	A. Aerogenes	12 grams	0.50	I.M.	S.D. 6 grams		

Table III.
Group IV.—Cases Given a Second Course of Streptomycin Therapy

Case No.	Age Sex	Diagnosis	Bacteria present before streptomycin therapy	In vitro sensitivity: streptomycin required for inhibition	Bacteria present after streptomycin therapy	Streptomycin total	Grams per dose q. 3 h.	Route	S.T. S.D.	Blood level mgm. %	Urine level mgm. %
9	22 M.	Plastic operation on hypospadias. Suprapubic cystotomy.	*1st course* B. Proteus. Pseudodomonas. *2nd course* E. coli B. Proteus	 (Not sensitive to 40 units per c.c.)	B. Proteus. Enterococcus Pseudomonas Enterococci	7.5 grams 6 grams	0.25 0.25	I.M. I.M.	S.T. 6 grams S.T. 6 grams	0.9	150
14	69 M.	Benign overgrowth of prostate. Cystitis, acute. Septicæmia. Cystitis.	*1st course* Blood— E. coli Urine— E. Coli *2nd course* *Urine* A. Aerogenes. Indifferent Streptococci.	64 units per c.c. 64 units per c.c. 32 units per c.c. 96 units per c.c.	Blood— No growth Urine (E. Coli Enterococcus) *Urine* Staph. Pyogenes Enterococci. Micrococci. Diphtheroids.	10 grams 10 grams	0.25 0.25	I.M. I.M.	S.D. 6 grams S.D. 4 grams		
23	72 M.	Two-stage suprapubic prostatectomy 4 months previous. Suprapubic fistula. Urethral fistula.	*1st course* B. Proteus *2nd course* B. Proteus	512 units per c.c. Resistant to 256 units per c.c.	Paracolon (resistant to 1,000 units. B. Proteus) B. Proteus (resistant units per c.c.)	10 grams 12 grams	0.25 0.50	I.M. I.M.	S.T. 6 grams S.T. 6 grams		
26	49 M.	Renal calculus, rt. Hydronephrosis, rt. Destroyed left kidney. Nephrolithotomy, right.	*1st course* Pseudomonas *2nd course* Pseudomonas	32 units per c.c. 128 units per c.c.	Pseudomonas Enterococci (sensitive to 128 units) Pseudomonas	10 grams 20 grams	0.25 0.50	I.M. I.M.	S.D. 6 grams None		

CONCLUSIONS

1. Thirty-five cases of non-tuberculous urinary tract infections are presented in which streptomycin therapy was used.

2. Sixteen cases (45%) were cured, most cases receiving 10 gm. of streptomycin each. The urine usually becomes sterile in 72 hours. These cases were relatively simple infections, without complications such as calculi, foreign bodies in the bladder, etc. Two additional cases were cured, but recurred.

3. Seventeen cases (49%) were clinically improved but not cured. Four of these cases had a second course of streptomycin without any further appreciable improvement. Five of the failures were uncomplicated cases, and one would have anticipated a cure in these.

4. In the presence of urinary tract obstruction, calculi, or foreign body (urethral catheter, suprapubic tube, or ureteral splint), sterilization of streptomycin-sensitive organisms in the urinary tract cannot be effected by 10 gm. of streptomycin.

5. Change in the bacteriological flora of the urine during streptomycin therapy may be an indication for changing to some other type of therapy, *e.g.*, penicillin.

6. Sulfathiazole or sulfadiazine was given with the streptomycin in the majority of cases. There was no evidence of increased bacteriostatic action because of this.

7. Although it could not be established that when sulfathiazole is given with the streptomycin the organisms fail to develop resistance to the streptomycin (as occurs *in vitro*), 3 cases were suggestive that this may occur.

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We wish also to thank Dr. Emerson Smith, Director of the Department of Urology, Royal Victoria Hospital; Dr. A. B. Hawthorne, and Dr. Magnus Seng, for their active co-operation in this study.

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PYRIBENZAMINE (N-PYRIDYL, N-BENZYL, DIMETHYL-ETHYLENEDIAMINEHYDROCHLORIDE) IN THE TREATMENT OF ALLERGY*

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RECENT trends in the study of allergic disease in man point to the release of a substance having many of the characteristics of histamine, if not histamine itself, which may be responsible for the production of symptoms. This is a natural outcome of previous observations which have provided much indirect data in support of such a theory. The now classical observations of Sir Thomas Lewis[1] in 1927 demonstrated that a histamine-like, or H-substance, is liberated by the skin following various forms of stimulation, and that the changes so produced can be duplicated by the injection of histamine intracutaneously. The finding that histamine is a normal constituent of animal tissue added further weight to the possibility that histamine itself might be released under these conditions.[2]

In 1929, Dale postulated that the combination of antibody with antigen, in or on cells, constitutes injury or cell damage with the subsequent release of histamine as well as other metabolites.[3] This theory has been amply borne out by a series of animal experiments which clearly show that histamine is released in large quantities following the production of experimental anaphylaxis.[4, 5, 6] It is to be remembered, however, that such is not the case in all species, for in some the rôle of histamine is not yet clearly defined, and other substances not yet identified may be released as well.[7, 8]

Although the histamine theory has never been as clearly related to allergy, the many similarities between allergy and anaphylaxis were of sufficient magnitude to warrant a search for histamine antagonists. By virtue of the properties of such compounds to inhibit the actions of histamine, it was hoped that they might prevent the occurrence of allergic symptoms in man.

After a lengthy search, Bovet and Staub,[9] in 1937, found that thymoxyethyldiethylamine, one of the

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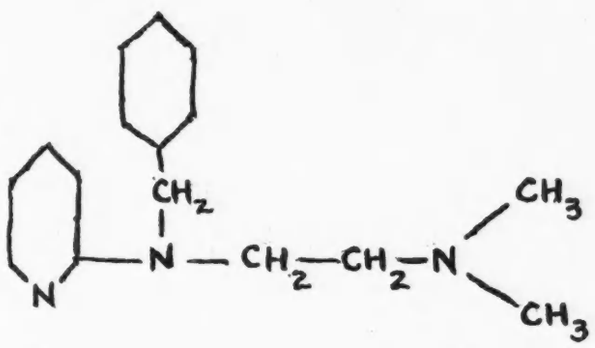
Fourneau series of compounds, was capable of inhibiting the toxic actions of histamine in laboratory animals. Because of its inherent toxicity, however, it was unsuitable for use. Nevertheless, these observations led to a renewed activity in this field, and, in spite of the war years, a number of substances much more potent and less toxic were synthesized. Their structure and pharmacological properties have been described in recent reviews.[10 to 13]

One of these, namely pyribenzamine,* was used for the present study. It was first prepared and described in 1945 by Mayer, Huttrer, and Scholz.[14] It has the following chemical formula:



PROCEDURE

The results to be presented were obtained on a group of 138 patients. Of these, 91 were from the allergy clinic, and 47 from private practice. The clinic patients were unselected in that each alternate patient in the clinic was treated with PBZ (pyribenzamine). Most had been observed many times previously, and their reactions to specific, as well as the usual forms of palliative therapy, were well known.

The majority of patients on PBZ therapy were deprived of all other forms of treatment at the time. However, 30 of the 61 cases of hay-fever were receiving inoculations throughout their period of observation. In this group, symptoms which called for additional therapy, in spite of inoculations, were treated with PBZ, and its ability to control these was observed.

The assessment of the treatment was based on many observations, single observations being considered as invalid. In addition, the effect of withdrawal of the preparation, or substitution of the tablet by a similar one composed of soda bicarbonate was noted in a small group. PBZ was administered orally in tablets of 50 mgm. The usual dose was 50 mgm., four times daily, at intervals of 3 or 4 hours. The range varied from 100 to 450 mgm. per day, the average being 200 mgm.

* The supply of pyribenzamine used in this study was generously provided by the Ciba Company Limited, through the courtesy of Mr. Angehrn.

In addition to the studies on the effect of PBZ on symptoms, studies were made on the effect of the previous administration of the drug on skin reactions. Complete skin tests were first made. On noting the positive reactions, serial dilution tests of either ragweed or grasses were carried out by the scratch method. These were carefully recorded and the patient was instructed to return on the following clinic day, when a dose of 100 mgm. PBZ was given orally. One hour afterwards, the dilution tests were repeated. These were again carefully recorded, and the results compared with those of the previous day.

Blood histamine studies were made on a number of these patients before, during and after treatment. The results of this aspect of the study will be reported elsewhere.

RESULTS

The results of the effect of PBZ treatment in the whole series are summarized in Table I.

TABLE I.

Diagnosis	*No.*	*Improved*	*%*	*Unimproved*	*Exacerbated*
Hay fever.....	61	47	77	14	..
Hay fever and asthma.....	22	14 (10)	64	8 (12)	..
Chronic asthma	15	3	20	12	3
Vasomotor rhinitis.....	21	13	62	8	..
Migraine.....	5	1	20	4	..
Eczema.....	4	2	50	2	..
Urticaria.....	6	4	67	2	..
Penicillin reactions.....	4	4	100	..	..
	138	88		50	3

Therapeutic results. — The most favourable results were obtained in the cases of hay-fever, where 47 out of 61 cases treated were kept virtually free of symptoms. In 4 of these, moderate results only were obtained, whereas no improvement was noted in 14. There were 22 cases of hay-fever associated with asthma. Of these, the hay-fever was controlled in 14, whereas little or no effect was observed in 8. Ten of these cases obtained relief of their asthma, but in the remaining 12 there was no effect.

The 15 cases of chronic asthma were of the mixed type, in that infection was a factor. Most were of long standing. Relief of asthma was noted in 3 only. In the remaining 12, the administration of the drug afforded no relief. It is noteworthy, however, that in 3 of those who were not relieved, exacerbations of the

asthmatic attacks were produced on several occasions. Two other cases in this group reacted in an unusual fashion, in that mild attacks of asthma could be aborted by the routine administration of the drug. PBZ was without any effect on severe attacks, however.

In the group of 21 non-seasonal allergic rhinitis patients, 13 obtained relief of symptoms. No change was observed in the remaining 8. The remainder of the patients, 19 in all, consisted of 5 cases of migraine, 4 of eczema, 6 of urticaria, and 4 of penicillin reactions. The numbers are too small to warrant appraisal. They are, however, added as an additional few to the larger groups reported by others.[15]

The effect of pyribenzamine on allergic wheals.—The effect of a previous dose of PZB orally on scratch dilution tests was studied in 22 patients by the method described above. The results are summarized in Table II.

TABLE II.

No. of patients	22
Marked inhibition	4
Definite inhibition	16
No effect	2

It will be noted that in all but two patients, a definite reduction in the size of the wheal and flare was produced. A corresponding increase of the strength of the extract was required to produce a minimal reaction. An example of such a test in a patient with ragweed hay-fever will be seen in Fig. 1.

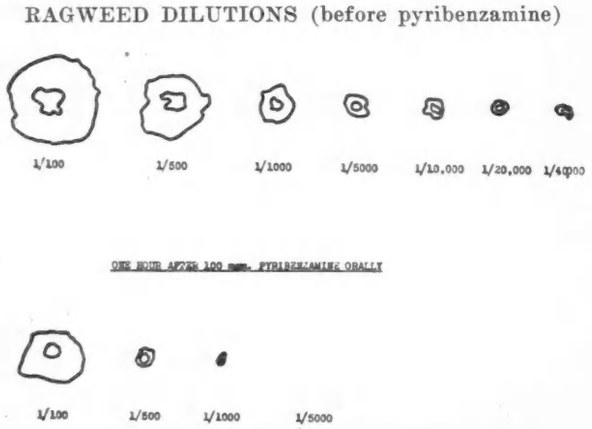


Fig. 1.—Showing the effect of the oral administration of 100 mgm. of pyribenzamine on ragweed dilution tests in a case of hay-fever. It will be noted that the effect is greater on the weaker dilutions than on the stronger ones. Thus, there is less reduction in the size of the reaction due to the 1/100 dilution as compared to the 1/500 strength.

Rapidity of effect.—In the vast majority of patients responding to the administration of PBZ, relief of symptoms was noted within thirty minutes to one hour of taking the drug. This is particularly true of the hay-fever group. In the cases of chronic non-seasonal rhinitis, however, the onset of relief was often delayed for as long as 2 to 7 days. Not uncommonly, such patients would observe no beneficial effect for several days, even though on as much as 350 to 400 mgm. per day. Once the condition was alleviated by the drug, withdrawal would result in a rapid return of symptoms. Prompt relief was again afforded by resumption of the therapy.

Side effects.—With one or two exceptions, side effects were of minor consequence in this series of patients. The various symptoms complained of, and their relative frequency are noted in Table III.

TABLE III.

Symptoms	*No. of times complained of*
Sleepiness	14
Nervousness	8
Nausea	7
Dry mouth	5
Dizziness	4
Insomnia	1
Headache	1
Vomiting	1

In comparison with the number of patients treated, these reactions occurred in a small group. In most instances, such complaints were present at the beginning of the administration of the drug. With continued therapy, they usually disappeared within 2 or 3 days. The drug had to be discontinued in two cases because of the severity of the side reactions. In the first, a case of ragweed hay-fever, 50 mgm. of PBZ produced such marked drowsiness that the patient was unable to drive his car for fear of falling asleep at the wheel. The second was a case of vasomotor rhinitis. Although taking PBZ alleviated the symptoms of the rhinitis, the patient was continuously nauseated, and therefore refused to continue.

COMPARISON OF PYRIBENZAMINE WITH OTHER FORMS OF THERAPY

About one-half of the patients in the whole group had been treated in previous years by conventional methods and supportive therapy. Of those who were benefited by PBZ, 4 preferred the former treatment, namely injections, because of the unpleasantness associated with side reactions. Besides the present group of patients, some 60 have been treated with

antistine, and about 100 with benadryl. Both of these are antihistamine compounds. The group treated with antistine will be reported on in a subsequent communication.

Since about 30 of the patients reported in the present study had received all three compounds at different times (*i.e.*, pyribenzamine, benadryl and antistine), some comparisons of the relative effect of each can be made. Of this group of 30, 4 preferred benadryl, 1 preferred antistine, and 1 found no difference between all three compounds. The remainder preferred pyribenzamine.

Among the patients treated, it has also been observed that PBZ may be of definite value in the prevention of constitutional reactions following the injection of ragweed or other extract. In this series there were 2 such patients. It was found that the administration of 50 to 100 mgm. of PBZ, one hour before the injection, effectually prevented the precipitation of symptoms attendant on an increase of the size of the dose of the extract. Thus, constitutional reactions can be avoided. This procedure is not without danger, for the patient must take PBZ before each subsequent injection until it is firmly established that he is still not vulnerable. Otherwise the result may be serious.

DISCUSSION

The results of this study agree in general with those of other observers who have used pyribenzamine therapeutically.[12, 15, 16, 17] They are also in agreement with the findings on the use of benadryl in these conditions.[12] We have found, however, that pyribenzamine is usually more effective than benadryl in many cases, and that the latter compound is more apt to produce side effects, although this is not invariable. Benadryl is more prone to produce drowsiness, and is sometimes preferable when sedation is required. The results with antistine are disappointing. While it is less prone to produce side reactions than the other two preparations, its therapeutic effect, in our experience, is minimal.

It is obvious that all forms of allergic manifestations in the human may not be on a histamine basis. Thus, a large proportion of chronic asthmatics fail to respond to antihistamine therapy. Others have also noted that the association of infection in cases of asthma generally renders the patient refractory to antihistamine therapy. In the urticarias, as well as the hayfever group, a proportion also fail to respond. In the series reported here, there was no obvious clinical difference in the 14 cases of hayfever who failed to obtain benefit from PBZ.

In this regard, it has been noted by others that the blood histamine increases during an attack of asthma.[19] The findings previously reported from this clinic do not substantiate this view, for it has been found that the level of the blood histamine, in or out of attack, may be altered without consistency in most patients.[20, 21] In fact, the majority of values were found to be normal or lower during the attacks. Recently, it has been observed that other forms of sensitivity, such as sensitivity to cold, may be divided into those which are due to histamine, and those which are not. The former show a rise in the blood histamine following the production of symptoms, and can be controlled by the administration of an antihistamine drug. No increase in the blood histamine can be demonstrated in the latter, nor can the symptoms be controlled by the administration of an antihistamine compound.[23] It is possible that this may apply to other forms of allergy as well, and could account for the differences in response to antihistamine compounds.

It has been noted that the antihistamine activity of these newer preparations is not paralleled by their antianaphylactic properties. For example, if a standard dose of pyribenzamine or benadryl is administered to a guinea pig, a much larger dose of histamine is required to kill the animal treated with PBZ than is required to kill a similar animal treated with benadryl.[18] However, an equal dose of either compound will protect guinea pigs from the lethal effect of anaphylactic shock. It is apparent, therefore, that other substances may play a rôle in the mechanism of anaphylactic shock as well. In the human, various forms of allergic manifestations respond to the same dosage of such compounds, even though one may be a more potent inhibitor of histamine than the other.[11]

The mode of action of these compounds is, as yet, undetermined. It is believed that they compete with the histamine molecule, thereby blocking it. Evidence in support of this theory has been advanced by Pellerat,[24] who has been able to show that the blood histamine is increased markedly following the administration of neo-

antergen, another antihistamine compound. Thus the histamine seems to accumulate in the peripheral blood, but is unable to exert its action.

No toxic effects have been observed by the continuous use of pyribenzamine over long periods.[25] We have followed one patient for a period of a year. Hæmograms done at random intervals have not shown any significant change in the morphology or numbers of the blood cellular elements.

While there can be no doubt that pyribenzamine and other similar compounds have a definite place in the treatment of allergy, it must be remembered that its action is only temporary, and that symptoms will recur once it is withdrawn. Since its effect is palliative, the actual cause of the allergy must be determined if a permanent result is desired and, therefore, the need for a thorough work up will still remain. These compounds will probably be of most benefit in those cases where the underlying cause of the allergy cannot be determined, and in the self-limiting allergic manifestations due to drug sensitivity. They will also have a definite place in the palliative treatment of hay-fever, particularly those cases which are mild, or who do not respond to hyposensitization, and for the amelioration of residual symptoms in treated cases.

CONCLUSIONS

1. Clinical studies on the use of pyribenzamine were made on a group of 138 patients with allergic manifestations.

2. Of these, 88 were relieved of symptoms, whereas 50 were not relieved.

3. The most favourable results were obtained in the treatment of hay-fever.

4. The degree of wheal and erythema following skin tests by the scratch method was inhibited in 20 out of 22 patients tested.

5. Pyribenzamine had some undesirable side effects in a small percentage of patients treated, but these are not serious. It is apparently harmless in effective doses over long periods of time.

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RESUSCITATION OF NEWBORN*

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IT is not the intention in this paper to review all the literature which has been written in the past few years on this subject. Many workers have contributed valuable information as to causation of asphyxia of the newborn and methods of resuscitation and needless to say wide discussion of the subject has resulted.

Russ and Strong[1] in their excellent article have covered the subject completely. In their study of 1,200 newborn, resuscitation was necessary in 196 cases. In their discussion of the methods fifteen ways are described in which resuscitation may be carried out. One of the methods which they stress and which proved most valuable in the severe cases of asphyxia was tracheal aspiration and introduction of oxygen directly into the lungs. It is this method which we wish to discuss here and to describe the technique we have found most satisfactory.

As direct laryngoscopy is essential to this procedure one who is familiar with the use of the laryngoscope is best suited to attend these cases. At present in our Obstetrical Department it has been the members of our anæsthetic staff who have attempted the resuscitation of the newborn. However it is a fairly simple procedure and any member of the obstetrical staff should be able to master laryngoscopy in these infants after a few demonstrations.

Litchfield and Beilly[2] have classified infant asphyxia into three types:

* Read before the Hamilton Academy of Medicine on March 12, 1947.

1. *Mild asphyxia.*—The infant resists movements of the head and limbs. Mucous plugs and amniotic fluid fill the mouth and pharynx.

2. *Moderate asphyxia.*—Muscle tonus is absent; there is no resistance to opening the mouth. No reflex irritation is induced by aspiration or by stimulation of the glottis.

3. *Severe asphyxia.* — The infant does not respond to attempts at resuscitation. He appears livid or pallid. There is absence of any respiratory movements and only an occasional flicker of the cardiac impulse may be detected through the thoracic wall. The upper respiratory tract has become a collapsed tube.

In the small group of cases which we have found necessary to resuscitate, those showing mild asphyxia usually began breathing without difficulty after the usual procedure of clearing out the mouth and pharynx of mucus and amniotic fluid along with rubbing or spanking the skin surfaces and application of the respirator. In those showing moderate asphyxia and which refused to respond after a short time to the usual above procedure, intratracheal catheterization was attempted without delay. It was observed that in many of these cases the infant took a breath as soon as the catheter entered the trachea whether there was mucus in the passage or not. In others breathing commenced immediately following tracheal aspiration and application of the resuscitator. In the cases of severe asphyxia, the general appearance of the infant at birth determined the necessity of tracheal suction immediately and introduction of oxygen directly into the lungs. In this group it may be necessary to leave a small intratracheal tube or catheter in the trachea following aspiration to maintain a good airway until the normal respiratory mechanism returns because even the pressure of the oxygen from the resuscitator may be unable to overcome the resistance of the collapsed and toneless tissues of the respiratory tract.

EQUIPMENT AND METHOD

A table with a sterile sheet is placed in the delivery room out of the way of room traffic. On this table or on a small near-by table the required instruments are placed, namely: an infant laryngoscope, a pair of special catheter introducing forceps, a No. 12 Fr. suction catheter, a No. 0 or No. 1 intratracheal tube. A sterile hypodermic containing a respiratory stimulant may also be placed on this table. Beside the table an Emerson resuscitator (or a make with similar action) is ready for immediate use.

Directly after the cord is cut, the infant is placed on the table and is held by an intern or nurse. The operator places the infant's head preferably over the edge of the table to obtain slight extension of the neck. He may sit on a low stool directly behind the infant's head or stand, whichever is the most convenient. The suction catheter is then attached to the suction tube of the resuscitator and the baby's mouth and upper pharyngeal passages are sucked out of all mucus and fluid. The catheter is then clamped in the introducing forceps about one and a half inches from the tip and placed in a dish of dettol ready for use. The dettol, a harmless antiseptic is also a good lubricator. The infant laryngoscope is now introduced into the infant's mouth (Fig. 1). The operator holds

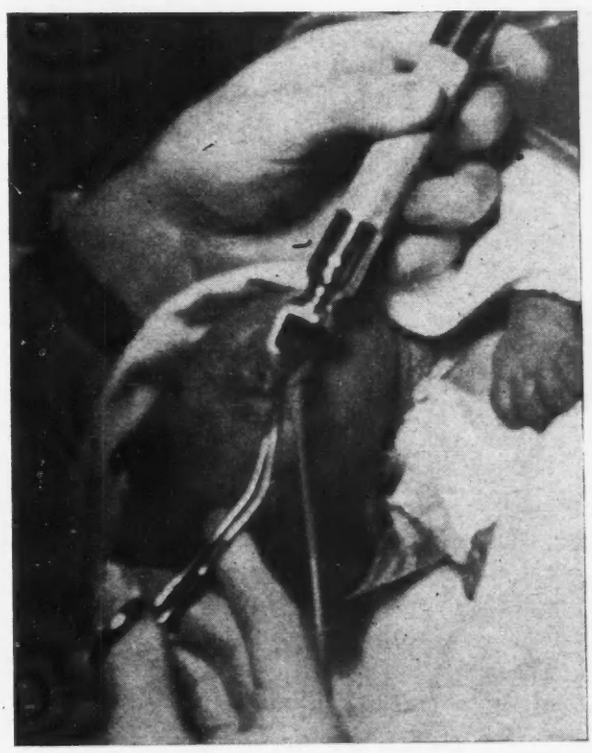

Fig. 1

the laryngoscope in the left hand and slowly and carefully runs the blade along the right side of the infant's tongue until the glottis is exposed by direct vision. If the pharynx is completely flaccid the first thing the operator sees usually on lifting the epiglottis is a fairly large opening, one that would easily take a No. 14 or No. 16 tube or catheter. This is the œsophagus.

Above the œsophagus and directly behind the epiglottis, the glottis is identified as a closed fold.

If the glottis is open it will be recognized as being somewhat smaller than the œsophageal opening. This is the picture usually seen in a completely toneless throat. The above description may vary depending on the degree of tone of the posterior wall of the pharynx. However, experience with the different stages of asphyxia will soon give the operator the necessary skill to determine the structures at a glance. The suction catheter is now passed into the glottis and down the trachea. The introducing forceps is so designed that the catheter although firmly held is not clamped off and suction may be maintained while introducing. The catheter should be passed as far down the trachea as it will go and suction continued until the passage is clear. As soon as the catheter is withdrawn the mask of the resuscitator is applied and oxygen is forced into the infant's lungs. If the oxygen is reaching the lungs there will be a slight rhythmic movement of the infant's chest wall corresponding with the speed of the resuscitator. This procedure is continued until the infant breathes on its own.

If a resuscitator or suction machine is not available, a glass pipette may be attached to the catheter and the operator can readily suck out the trachea by mouth.

SUMMARY

This brief description of the technique of tracheal suction is one and perhaps the most important method of resuscitation of the newborn. It aids resuscitative measures by clearing out the respiratory passages which are usually overlooked, namely the glottis and the trachea and definitely stimulates the breathing reflex. Tracheal suction may be simplified considerably by the aid of a small infant laryngoscope and a pair of catheter-introducing forceps.

In adding this resuscitative measure to our obstetrical service we feel that the results have justified its adoption as a routine procedure.

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A WORKING CONCEPT OF THE PSYCHONEUROSES*

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THE voluminous flood of articles relative to the psychóneuroses continues to grow apace. Some of us who are forced to read them to keep abreast of the times have trouble enough keeping the various views expressed straight in our minds. If the busy general practitioner, who snatches a few minutes to read the odd isolated article, is confused, who can wonder? His disappointment in finding practical help in the handling of his increasing number of psychoneurotic cases is to be expected, unless he can find some commonsense explanations and suggestions to aid him. It is with the hope of being of assistance in this regard that this article is offered.

Of all the concepts relating the psychoneuroses to common everyday human experiences I like best that of Dr. Abraham Myerson, Director of Research of the Boston Massachusetts State Hospital. The first part of this paper, therefore, will be based on my understanding of his teaching in this regard, since I believe it offers us a working concept of the psychoneuroses which will aid us in understanding and treating our patients.

The psychoneuroses are illnesses of the whole individual (not just attitudes of the mind) characterized by subjective and objective impairment of energy, visceral function, sleep, mood, concentration, reasoning ability, and general reaction to life, due to disturbances of one or more of the emotions. They start out quite naturally with the patient experiencing some dissatisfaction with one or more aspects of his life. He may be conscious of his inner unrest. More often he is aware only of a vague feeling of irritability and restlessness which may first be noticed by his relatives or friends, much to his surprise. He may worry about his feelings or about the disturbing personal or environmental irritations, with attempts to throw off his concern and forget his troubles in various ways. He continues to carry on "so long as his energy, bodily functions, and ability to

* Read at the Porcupine District Medical Society Meeting on May 21.

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respond to the situation are not impaired."[3] Up to this point he cannot be said to have a psychoneurosis. But, to quote Myerson,[3]

> "When the unrest reaches into his physiology, so that he can no longer sleep well or eat with heartiness or satisfaction, when his libido (sex desire) becomes seriously disturbed, and especially when his consciousness of his body becomes agog with fear, and his attention switches from his trouble to the reaction within him, then he has a neurosis."

It is then that he becomes a sick individual.

This is his state when he reaches his physician, convinced that he has something seriously wrong with his heart, stomach, head, back, nerves, etc. He has forgotten, or almost forgotten, his original worries or dissatisfactions, which seem dwarfed in comparison with the seriousness of his physical symptoms of ill health. He does not want to discuss his dissatisfactions with life. He wants treatment for his disturbing complaints. That his emotions have been aroused is usually evident even though he may deny that fact.

The study of his emotional life will give us the key to his illness. In doing so it will help us to understand the psychoneuroses if we think of emotion as a drug. Small doses of the drug, emotion, are usually beneficial to the patient, having a tonic effect. Small doses of anger, called "determination" help him exert greater effort to overcome his problem. Small doses of fear stimulate to more effort or harder studying. Small doses of love make him more tolerant of others and easier to live with. Large doses, however, are often toxic in their action. Moreover, as with other drugs, patients vary greatly in their susceptibility to the drug, emotion.

Let us compare, for instance, the effects of a dose of atropine and a dose of fear:

Effects of atropine	*Effects of fear*
Increases heart rate.	Increases heart rate.
Decreases gastro-intestinal motility.	Decreases gastro-intestinal motility.
Dilates the pupils.	Dilates the pupils.
Inhibits flow of saliva.	Inhibits flow of saliva.
Produces unpleasant feelings.	Produces unpleasant feelings.
	Increases respiration.
	Increases energy.
	Decreases sleep.

Thus we see that fear has physiological effects comparable to atropine in many ways.

Fear, of course, is not the only emotion that acts on the body functions like a drug. Anger and love also exert effects on the body in proportion to their dosage and the susceptibility of the individual. If one considers further the physiologieal effects of the emotions it will be seen that all the emotions prepare the body for action. When the action takes place their effects are expended and the body returns to its normal activity. This is the normal state of affairs. Consider, however, what happens when the body is prepared for action, but the action is inhibited or held in check.

INHIBITED EMOTIONS AND PSYCHONEUROSES

The normal, healthy individual is usually quite unconscious of the activities of his viscera. He may with great difficulty bring his visceral activities into consciousness to a limited degree. Usually, however, he does not feel his heart beating against his ribs, or the pulse of the blood through his arteries. His respirations are on the fringe of consciousness but seldom intrude into his attention, while his gastro-intestinal system attracts his notice periodically. Indeed most of the bodily sensations remain in the background in health and he is not continually noticing the "feel" of his head, face, limbs, etc. He may even scratch himself without realizing that his skin was mildly irritated.

Now suppose this healthy person is suddenly faced with a situation arousing deep emotional response to which he dare not give adequate motor expression. What happens then? For instance: here is a man who has been grossly insulted, with the natural result that he is angry and is ready to fight. But he is a doctor, and if he gets into a common brawl he will lose face (let alone get a punch in the eye in return) so he stifles his feelings. The result is a consciousness of his organism in an unpleasant or even painful and disconcerting way. A flushing of the face, dryness of the mouth, pounding of the heart, pulsations throughout the body, tension and perhaps tremor of the muscles, break in upon his consciousness. He becomes aware of his bodily feelings in an annoying or even painful and disorganizing way. If he continues to do nothing about it except brood his rest may become difficult, his appetites inhibited, and no peace is experienced "so long as the memory of the affront brings with it a disagreeable visceral-somatic consciousness".[3] Whether this condition lasts seconds, hours, or days it is a psychoneurosis. These are the same symptoms experienced by the psychoneurotic patient. The normal person, of course, quickly readjusts himself to a state of rest and peace. The psychoneurotic patient cannot do so because his symp-

toms arouse new emotions and he loses sight of the original precipitating situation.

If we substitute for anger in this illustration any of the adverse emotional states of fear, disgust, etc., the same statements can be made. Essentially what is experienced by the individual with repressed emotions is a consciousness that: (1) His organism is seething. (2) His sensations are claiming his attention in spite of the demands of his purpose in life. (3) He finds it hard to summon sufficient energy to perform his social or personal duties. (4) He has a diminished capacity to eat, sleep, and rest.

The similarity between the effects of a repressed adverse emotion and a psychoneurosis is evident.

EXCESSIVE FATIGUE AND PSYCHONEUROSES

The normal exertion of living results in a set of subjective experiences called fatigue. The fatigue state stimulates an appetite or desire for rest. The fatigue state also makes one conscious of certain bodily sensations that ordinarily are not disagreeable and which predispose one to rest and a feeling of restfulness. Some of these bodily sensations are: a somewhat flushed feeling; a heaviness of the limbs and eyelids; a desire to yawn; a relaxed feeling; a feeling of lowered activity.

These all tend to make rest and sleep easier. Moreover, on waking, one has a sense of recuperation that is one of the deepest satisfactions of life.

If, however, for any reason the individual has to continue his activity for a protracted period in spite of his fatigued state, the result is an unpleasant, restless feeling which may be accompanied by an increased consciousness of his organism and such feelings as: numbness or prickly feelings in the limbs; unsteadiness or ataxia; painful paræsthesiæ throughout the body.

Moreover, when he at last attempts to seek rest he may become uncomfortably conscious of: pounding of his heart; his respirations; pulsations in his ears or throbbing in his head; generalized uncomfortableness and desire to toss about; an absence of drowsiness; painful tired feelings around the eyes and face; over-reaction to noise; irritability and apprehensiveness; gastro-intestinal rumblings. The normal individual controls himself, persists in his attempts to relax and finally falls asleep and awakens refreshed. For the time being he has experienced the symptoms of a mild psychoneurosis. But the psychoneurotic patient cannot control himself no matter how hard he tries. He awakes each morning unrefreshed. He starts off the day with a fatigue deficit. He is worse the next day and the vicious circle is set up.

FEELINGS OF FRUSTRATION AND PSYCHONEUROSES

Another common life experience that most of us have to meet some time in life is frustration. The individual is confronted with the fact that his life purposes are blocked, that he cannot achieve his goal: his hope of promotion is blasted; the desired woman says "No"; savings have disappeared in speculation; the faithful friend deceives.

For the frustrated individual the world becomes divested of its meaning. The basic values of life seem to have exploded and feelings of reality are replaced by feelings of unreality. Doubt takes the place of certainty and obsessive questions disrupt his former faith and trust. These were formerly almost unconscious but now are dragged into the limelight of disillusionment. As this feeling of uncertainty and questioning grows, the following developments take place: he mistrusts his friends and they appear different to him; regards his changed feelings with alarm; questions his former desires and satisfactions; the gratification of hunger loses its satisfaction; anger loses its sting; sexual experiences lose their pleasure; work loses its worthwhileness; games and recreation lose their appeal; social relationships seem fruitless; nothing is worthwhile, everything is unreal. He acquires a "feeling of detachment or double personality". These again are the manifestations of certain of the psychoneuroses.[3]

The normal individual throws off these feelings of uncertainty and unreality in time. "Doubt is displaced; introversion disappears; the world becomes enjoyed at its face value; activities are given spontaneous attention; values are re-established and the world and the individual becomes real".[3] But the psychoneurotic person cannot do this. For him the unreality syndrome persists and may reach the proportions of a schizophrenic psychosis.

It will be noticed that no mention has been made of the unconscious or sub-conscious mind in this description of psychoneurotic manifestations. The symptoms of the psychoneuroses are rather shown as exaggerations of normal mechanisms which have exceeded the bounds

of the normal when the strains and stresses of life have become too great for the individual. Viewed in this light the psychoneuroses fit readily into the medical concept of disease.

A WORKING CLASSIFICATION

Before mentioning the classification of psychoneuroses I would like to emphasize the fact that these conditions are real diseases which the patient can prevent developing only to the extent that he can prevent illnesses like scarlet fever or pneumonia. The classification of the psychoneuroses, or neuroses as they are often called for brevity, is apt to be confusing to those of us who read various authors. For many years almost every psychiatrist of note had his own pet classification. Some still insist on individuality. However, the American Psychiatric Association has adopted an amended classification which is used by most authorities on this continent today.[5] I shall try to give a condensed version of this classification in simple terms.

1. *Hysteria.*—An illness in which mental conflict is involuntarily converted into physical phenomena. The resulting physical signs and symptoms are symbolic substitutes for an unbearable emotion. They appear in place of emotional tension. While they are present they prevent the patient from facing up to a difficult situation. Because of this they sometimes appear to be wilfully assumed by the patient but this is not true. Typically, the hysteria patient is not hysterical but is rather remarkably unconcerned about her physical symptoms. If such a patient is excited and emotionally uncontrolled the emotion expressed is not the emotional conflict that is causing the trouble. This is carefully hidden by the hysterical symptoms.

The most common manifestations of hysteria are: muscle paralysis or paresis (monoplegia, hemiplegia, aphonia); inco-ordination (tremors, astasia-abasia); anæsthesia (not confined to segmental distribution); loss of special senses (blindness, deafness); positive visceral symptoms (vomiting, diarrhœa); convulsive attacks or attacks of delirium; mental dissociation (amnesia, fugue).

There are two types of hysteria: (1) conversion hysteria, as above; (2) anxiety hysteria, as above, plus anxiety.

Hysteria hides its cause even from the patient. If the cause can be found and if the patient is helped to discover it, one of two things will happen; either the patient will get better, or, if she still cannot face the cause she will develop new symptoms. Moreover, in anxiety hysteria, an increase in the patient's anxiety is an indication that the doctor is approaching the cause of the illness. It is like a game of "hot and cold" as you seek for the cause.

2. *Psychasthenia or compulsive state.*—An illness characterized by morbid fears (phobias), obsessive thoughts and compulsive acts such as the necessity to perform repeatedly certain movements or acts, or to think certain thoughts or say certain words or phrases. These patients often have useless insight. They know their obsessions are irrational but can do nothing about them. When they try to fight against their symptoms they experience increasing anxiety. Their symptoms are protective mechanisms that obviate the necessity of their making decisions. This is the hardest thing these over-scrupulous, doubting, introverted people have to do. "Did I do right?" and "What will people think of me?" are the bugbears of their lives. While their symptoms tend to relieve their original anxiety they are often anxious about their symptoms and strive to overcome them with a consequent increase in anxiety, in a vicious circle.

At the height of their illness all their decisions must be made for them until their basic conflicts can be unearthed and until their self-assurance can be built up.

3. *Neurasthenia.*—A disease whose outstanding characteristics are complaints of motor and mental fatigability, diminished power of concentration, and pressure (often called pain) in the head, scalp, neck or spine. These patients are tired all the time. They haven't the energy to do things. Even eating becomes a chore. Sleep is unrefreshing. They wake up more tired than when they went to bed. Other bodily symptoms may appear, but fatigue holds the prominent place in the symptom picture. In the acute phase depression is prominent and may be suicidal in proportions.

Conflict against the inevitable is usually the basis of this condition. Recovery entails learning to accept what has to be. To accomplish this the patient frequently must be removed from the disturbing environment for a time. He needs a period of rest and re-education about life. Some new interests should be stimulated on his return to duty.

4. *Hypochondriasis.*—This condition consists of obsessive preoccupation with one's health or the health of the various organs of one's body. Various somatic complaints are present which cannot be relieved by a demonstration of the absence of disease. The patient's chief interest in life is his body and its sensations. Every slightest discomfort signifies a new ailment for which he must find an explanation but which can never be explained to his satisfaction. One gets the impression that the patient enjoys poor health and lives for it. His health has become his pet hobby.

The only help for these patients is in finding an absorbing interest for them outside of themselves.

5. *Reactive depression.* — Is a condition in which the patient reacts to some situation which naturally produces sadness, with a depression whose degree and duration is greater than normal. Anxiety and bodily complaints are often present but sadness is the outstanding manifestation. This condition promptly clears up when the exciting situation is relieved and the patient finds new interests. Electro-shock therapy often benefits these patients greatly.

6. *Anxiety state.*—By no means of sixth place in importance to the general practitioner is the illness called "anxiety state" or "anxiety neurosis". The former indicates an acute reaction, the latter a chronic condition with periodic exacerbations. In this illness there is a history of more or less continuous diffuse anxiety and apprehensive expectation, with paroxysmal exacerbations associated with the physiological signs of fear, which we discussed earlier in this paper. These manifestations are not fear substitutes, as in hysteria, but they are the natural results of fear; palpitation, breathlessness, tremors, sweating, tense feelings in the muscles, weak feelings, headaches, elevated blood pressure, gastric hyperacidity and spasm, and visual symptoms of various kinds.

Fear is the basis of this condition. The illness clears up when fear is removed.

7. *Mixed psychoneuroses.*—As in many other diseases, many cases of psychoneurosis do not adhere strictly to the textbook picture. Some show combinations of symptoms of one or more of the above types. In these cases the diagnosis "mixed psychoneurosis" is used.

THE TREATMENT OF PSYCHONEUROSES

I have already given some indications regarding the basis of treatment of the various types mentioned above. I would now like to suggest some "Don'ts" in the treatment of these conditions and then make some more specific suggestions as to what may be done for them.

Don't tell a patient there is nothing wrong with him then give him a bottle of medicine for his nerves. That is contradictory and the patient will soon lose faith in you.

Don't tell the patient it is just his nerves and send him home to be a chronic case of nervousness.

Don't tell the patient to put his troubles out of his mind or to forget them. If he follows your advice he will develop other psychoneurotic symptoms.

Don't expect to cure these patients in one treatment. They often put up a tremendous battle to be what they consider to be legitimately ill, and may become worse before they are better. To successfully treat these cases you must have more patience than your patients.

Don't expect to find an easy cure-all for the psychoneuroses. Many have hopefully looked for electro-shock therapy to be the answer to their problem only to be disappointed. Electro-shock therapy has a definite value in the treatment of certain types of cases. Its chief value is in the treatment of those illnesses characterized by marked emotional excitement or depression.

Treatment suggestions.—(*a*) Catharsis. Heading the list of practical treatments of value in the treatment of the psychoneuroses is that in which the patient is encouraged to unburden himself and get the load off his chest. Some symptoms will disappear as the patient confesses. The more emotion he can express as he tells his story the better. Sorrow, anger, and fear poured out in the doctor's office will help the patient. It is just like letting pus out of an abscess to let the patient explode and express his feelings where he knows his confidences will be respected and where he is assured of a sympathetic hearing.

After the superficial explosion of feeling one must probe to the depths of the psychiatric pathological condition by going back to the very beginning of the first symptoms and ascertaining the emotional tensions present at that time. Often for the first time the patients may be led to understand the relationship of their symptoms to an emotional conflict or trauma. This often relieves marked anxiety and opens the way for their readjusting their lives or attitudes with resultant recovery.

(*b*) Gaining the patient's confidence. This is not as easy to do today as it was in the time of our grandfathers. To do this the doctor must do more than lend a sympathetic ear. He must bestir himself, get out his diagnostic tools and go to work. The more he inconveniences the patient the better. Nothing short of having the patient strip and pushing one's finger into every nook and corner will do. These patients want to be examined. They need to be reassured. This can no longer be done in this

enlightened age by feeling the pulse, looking at the patient's tongue, teeth, tonsils, having him say "Ah" and giving him a reassuring pat on the back. You would be surprised how many patients are referred to me who have not been examined by their family physician at all. To gain the patient's confidence the examination must be sufficiently complete to satisfy the patient.

(*c*) Reassurance and explanation.—The patient needs to be assured that he is not seriously ill physically but he also needs a logical explanation of his symptoms. It does not take long to explain how emotions cause physical symptoms. This is not harder for the patient to understand than how the heart can cause swelling feet. If they know there is a cause for their complaints their anxiety will be relieved. They need to know that their doctor knows the cause of their complaints. But no doctor can put that across to a patient for long unless he does know.

(*d*) A daily program.—Many of these patients will be helped by being put on a regular daily program. They are having trouble making big decisions in their lives so the little decisions of every-day activity irritate and upset them. They need to be told when to get up and when to go to bed. What to eat and how to use their time. They need to have prescribed exercise and hobbies, prescribed reading and social contacts. Their life needs to be put on an orderly basis so that they can have time to re-orient their thoughts.

(*e*) Teaching relaxation.—Many tense patients have to be taught how to relax. This must be done by actual demonstration repeatedly. Of aid in this regard is the prolonged warm bath and the warm drink at bed-time. Sedatives and antispasmodics may be used sparingly. Bromides and phenobarbital still have their place but should not be used wholesale. Good old paraldehyde is still of value in the more acutely upset cases. Sodium amytal is the only sedative that should be used for patients to be given electroshock therapy.

(*f*) Sub-shock insulin.—For the jittery, restless anxiety patient and the mildly depressed patient who is losing weight and has no appetite especially for breakfast I have found the sub-shock doses of insulin of great value. For this treatment the patient must be hospitalized for a period of from two to four weeks. He will need a nurse who understands the effects of insulin for the morning hours. For the rest of the day he can be treated on the open ward.

The treatment starts at 7.30 a.m., at which time the fasting patient is given 10 units of insulin by the observing nurse who has him under constant supervision in a quiet room. The patient is encouraged to sleep and is given reassurance if he feels apprehensive. The dosage is increased by 10 units daily up to 120 units or an optimum dose below that amount. A state of mild hypoglycæmia develops, with drowsiness, sweating, a tremulous feeling, etc., which readily pass off when carbohydrates are given. The patient is closely observed to see that he does not go into coma. Should this occur or be gravely threatened he is given glucose at once by mouth, or intravenously to avoid same and subsequent dosage is kept below that amount.

At 10.30 a.m. breakfast is served in bed, consisting of glucose, fruit juice, cereal, 2 eggs and bacon, 12 ounces of potatoes, lots of toast and tea, coffee, or milk. The patient is allowed up after breakfast and does occupational therapy throughout the day. Treatments are given on Monday, to Friday inclusive, each week. After the two days' rest the Monday dosage should be 10 units less than that of the previous Friday. Occasionally a state of coma develops on comparatively small doses of insulin, hence it is necessary to have always at hand an emergency tray. This should contain 50% glucose for intravenous injection with a 20 c.c. syringe as well as hypodermic syringes of adrenalin and coramine. As patients may have a delayed hypoglycæmia in the afternoon they are warned to carry a few lumps of sugar or chocolate bar with them to eat should they feel faint, giddy or sweating. On this treatment patients lose their tenseness and anxiety, put on weight and are much more amenable to psychotherapy.

SUMMARY

1. The onset of the psychoneuroses has been related to normal life experiences.

2. The American Psychiatric Association classification of psychoneuroses has been briefly described.

3. Some suggestions re treatment of psychoneuroses have been made with a description of the details of administration of the sub-shock insulin routine.

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RÉSUMÉ

Abrégé de la conception de Myerson des psychonévroses. Cette maladie atteint l'individu tout entier et se manifeste par des signes subjectifs et objectifs. Les émotions se comparent souvent par leurs effets à des médicaments et donnent lieu à des réactions analogues. L'inhibition des émotions, la fatigue prolongée et les diverses frustrations conduisent souvent à la psychonévrose. La classification proposée est celle qu'admet l'*American Psychiatric Association*. Le traitement de ces états variera avec les individus. En principe, tous doivent être écoutés patiemment et aucun ne doit être traité avec indifférence. La méthode cathartique est toujours excellente; elle permet de gagner la confiance du malade et de le rassurer en lui expliquant certains mécanismes de ses actes. Celui-ci devra avoir un programme quotidien et il devra tenter quelque technique du relâchement. Les électro-chocs seront donnés à certains sujets choisis; par ailleurs, l'insuline à dose pré-comateuse aura souvent de bons effets. JEAN SAUCIER

MORTALITY IN BENIGN PROSTATIC OBSTRUCTION*

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IN 1895 Fuller[1] in New York performed the first suprapubic prostatectomy. Earlier operations had been performed on the prostate gland, but as Thomas-Walker[2] so aptly said, all previous attempts were merely "nibbling efforts". Unfortunately, priority is sometimes given to Freyer[3] who actually did not publish his first paper until five years later. However, Freyer must be credited with popularizing the operation and calling the profession back to more rational procedures than ligation of the internal iliac artery, vasectomy, and castration, which were then fashionable. Freyer[4] in subsequent communications published remarkable mortality statistics of 5½% in 1,625 cases, all of which apparently were one-stage procedures with little or no preliminary catheter drainage. Thomson-Walker[5] published 2,691 similar cases with a mortality of 9.9%.

In 1899 Young[6] performed the first premeditated two-stage suprapubic prostatectomy. Following the publication of this case the two-stage operation gradually became appreciated, although its benefits for a long time were the subject of much conjecture and little understanding until adequate renal function tests were developed.

PREOPERATIVE CARE

In the second decade of this century there was a drift back to one-stage procedures which were popularized by Judd,[7] Lower,[8] and others. Now a similar trend is becoming widely manifest and there is likewise a growing tendency to question accepted methods of preoperative care. The direction of all suggestions has been toward the elimination of urethral drainage and the facilitation of the second-stage operation so that it will not be a blind procedure. This latter objective may become more and more necessary if the newer hæmostatic agents are to be utilized.

The public ward deaths at the Montreal General Hospital have been reviewed to see if any information on these problems of technique and preparation could be elicited, and also to see if any just criticism could be made of presently accepted methods. For the purpose of the study 520 consecutive cases from 1937 to 1945 have been reviewed. All of these patients had a classical two-stage suprapubic prostatectomy and all had preliminary urethral catheter drainage. They thus constitute an ideal group for the evaluation of the standard two-stage suprapubic operation. All cases in which a diagnosis of prostatic malignancy was made were excluded as well as those who had any other type of prostatic surgery and those who were discharged from the hospital without surgical treatment.

MORTALITY

The hospital mortality for the eight-year period in this group of cases was 12.6%. This figure represents all deaths occurring in the hospital and includes both preoperative and postoperative fatalities. It means that approximately one out of every eight patients in this series died in the hospital. This may seem an unusually high figure, but it must be remembered that a large proportion of patients admitted to the public wards of the Montreal General Hospital are poor surgical risks and many are *in extremis* when they are first seen. Malnutrition and far advanced disease processes are commonly encountered. This is well illustrated by the fact that in this group of patients the preoperative deaths constitute 37.5% of the total hospital mortality. In other words, death occurred in more than one-third of all fatal cases before any operation could be performed. The actual preoperative death rate was 4.9%. When this figure is deducted from the gross hospital mortality, an operative

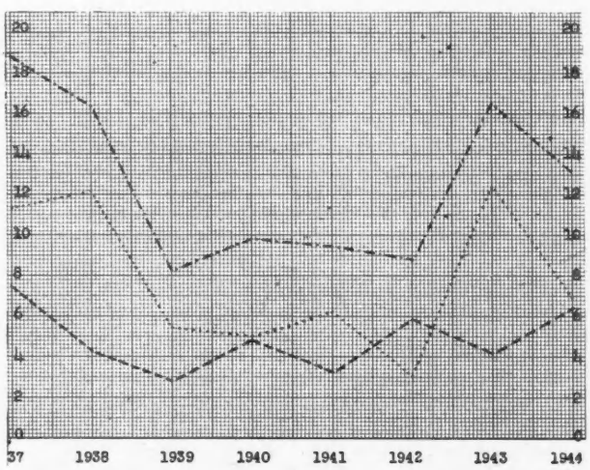

Fig. 1.—Upper line represents total hospital mortality in 520 public ward patients with benign prostatic hypertrophy. Average 12.6%. Middle line shows annual operative mortality in same group of patients. Average 7.8%. Lower line indicates preoperative death rate in above group. Average 4.9%.

* From the Department of Urology, The Montreal General Hospital, Montreal.

mortality for the entire eight-year period of 7.8% is obtained. The annual figures for operative deaths range from 3.0 to 12.3%.

This extreme variation of 4:1 demonstrates the fallacy of basing any opinion on a single year's work or on too small a group of cases. It is doubtful if any adequate information can be obtained from any groups of less than 500 cases. This same opinion was expressed by Morson[9] in 1937 when he said that the only accurate statistics on death rate published from England were those of Freyer and Thomson-Walker, because they were the only ones of adequate size. Thomson-Walker's annual mortality varied from 1.7 to 11.4%. In this present series, by selecting an intermediate three year period, an over-all operative mortality of 4.7% in 176 cases could be reported, or in one year's work a mortality rate of 3%.

Operative mortality statistics exceeding 7.8% have been reported from various centres. Rolnich and Riskind[10] from Chicago report an amazingly high 47.5% mortality. Kahle and Beachmer[11] from New Orleans report 20% mortality in transurethral and suprapubic cases over a two and one-half year period. McCrae[12] from Philadelphia has recently reported 16.5% mortality among 317 ward patients. Lower figures are reported from Johns Hopkins Hospital by Vest[13] who claims a 1.6% mortality in perineal prostatectomy. However, a lower mortality rate is commonly associated with this operation. He also reports 20 preoperative deaths which is a preoperative mortality rate in his series of 4.8%. This figure is almost identical with the 4.9% here reported.

An analysis of the operative deaths reveals an average mortality for the eight-year period of 3.25% for the first stage and 4.7% for the second stage operation. The annual first stage mortality varies from 0.0 to 7.2% and that of second stage from 0.0 to 9.4%. These figures again illustrate the fallacy of quoting statistics on a single year's work. In this series cystostomy caused 28.1% of all hospital and 45% of all operative deaths. The ratio of deaths after first and second stage procedures was 4.5:5.5. It is apparent that in this series preliminary bladder drainage was almost as dangerous as the second-stage operation. There is an unfortunate tendency to discount the danger of preliminary bladder drainage by open operation under general anæsthesia. It would seem that some published figures ignore such deaths, only including for statistical purposes deaths after prostatectomy. For this reason published reports are very hard to interpret. On such a basis the operative mortality in this report would be 4.7%.

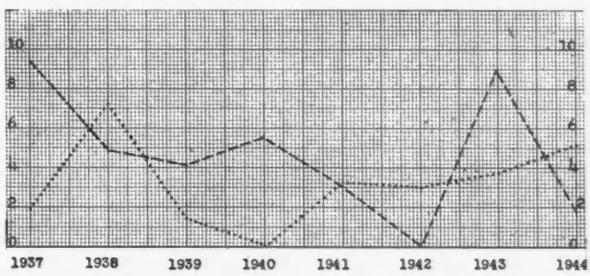

Fig. 2.—Dotted line represents annual operative mortality in first-stage suprapubic prostatectomy (cystostomy) in 520 public ward patients. Average 3.2%. Interrupted line shows annual mortality figures for the second-stage operation in same group of patients. Average 4.7%.

In the group of patients under review there were 64 hospital deaths; 24 or 37.5% occurred preoperatively; 18 or 28.1% followed the first stage; and 22 or 34.3% resulted from the second stage operation.

As might be expected from the age group represented by these patients, cardio-vascular disease was one of the chief causes of mortality accounting for 26.5% of the total deaths. Despite every effort complications arising from the circulatory system will probably always remain a serious hazard for the prostatic patient.

Pulmonary embolism was responsible for 14% of all deaths. Its greatest incidence was found after the second stage, accounting for

TABLE I.

Analysis of preoperative and postoperative causes of death in 520 public ward patients with benign prostatic obstruction.

Preoperative			*First stage*			*Second stage*		
1. Pyelonephritis	9	37.5%	Pyelonephritis	6	33.3%	Pulmonary embolus	5	22.7%
2. Cardio-vascular	8	33.3%	Cardio-vascular	5	27.7%	Shock	5	22.7%
3. Pneumonia	3	12.5%	Pulmonary embolus	2	11.0%	Pyelonephritis	4	18.2%
4. Pulmonary embolus	2	8.3%	Shock	1	5.5%	Cardio-vascular	4	18.2%
5. Carcinoma of bladder	1	4.1%	Acute cholecystitis	1	5.5%	Hæmorrhage	3	13.6%
6. Extravasation of urine	1	4.1%	Intestinal obstruction	1	5.5%	Uræmia	1	4.5%
			Gastric hæmorrhage	1	5.5%			
			Renal failure	1	5.5%			

approximately one-quarter of all fatalities in that group. Many deaths from pulmonary embolism will be, in the future, prevented by early femoral vein interruption. The work of Allen[14] and others has shown ligation of the femoral vein to be a safe surgical procedure, which is indicated as soon as a diagnosis of thrombo-phlebitis or bland thrombosis in the femoral system is made. The diagnosis must be suspected in the presence of a persistent low-grade fever, dilation of the superficial veins of the leg, slight œdema, tenderness of the calf on pressure, and pain in the calf on dorsiflexion of the foot. Premonitory, non-fatal emboli are not uncommon and occurred in one case in this series. It is possible that some of the deaths here reported could have been anticipated and prevented by femoral vein ligation.

Shock was responsible for six deaths which represent 15% of the operative fatalities. Only one of these occurred after the first stage. A certain unavoidable mortality from this cause is probably inevitable. It can be kept to a minimum by appropriate anæsthesia, careful operative technique, and the liberal intravenous use of whole blood and plasma.

Pyelonephritis and Hæmorrhage

The two remaining important causes of mortality are pyelonephritis and hæmorrhage. They were responsible for 22 deaths which represent approximately one-third of the total hospital mortality. Pyelonephritis has always been a serious and common complication of prostatic surgery, and remains so despite the use of sulfonamide drugs. Riches and Muir[15] list pyelonephritis and hæmorrhage as the chief causes of death. Nitch[16] says, "The greatest postoperative danger is sepsis in the form of suppurative pyelonephritis". These opinions are supported by the findings in this present series. Pyelonephritis was the chief cause of death in both the preoperative and first stage groups, accounting for approximately 35.7% of their combined fatal cases. The question immediately arises as to whether preoperative urethral catheter drainage was a factor in producing these deaths. In the preoperative group there were nine fatalities attributable to renal infection. In seven of these nine cases the onset of fever seemed definitely to have been associated either with the insertion of the urethral catheter or with the repeated replacing of the catheter or with temporary arrest of urethral drainage. In the remaining two cases there was a high fever on admission and its course seems not to have been influenced by catheter drainage. Whether these cases would have done better on immediate or early suprapubic drainage cannot be determined. Certainly they seem to indicate that the urethral catheter can be a dangerous instrument and that it must be used with expert care.

Table II.

Combined cases of preoperative and postoperative death in 520 consecutive cases of benign prostatic obstruction subjected to preoperative urethral catheter drainage and two stage suprapubic prostatectomy.

1. Pyelonephritis	19	29.7%
2. Cardio-vascular	17	26.5%
3. Pulmonary embolism	9	14.0%
4. Shock	6	9.4%
5. Unrelated conditions	5	7.8%
6. Hæmorrhage	3	4.7%
7. Pneumonia	3	4.7%
8. Uræmia	2	3.2%

Catheter Drainage

It has been a more or less accepted principle on this continent that patients be prepared for a first-stage operation by preliminary catheter drainage which averages from one to three weeks. It is in this period of preliminary drainage that our practice differs so markedly from that employed in Great Britain. There, the catheter, if used at all, is left in place for about 48 hours. It is used to empty a chronically distended bladder or to provide temporary drainage in the presence of gross infection. Irwin,[17] writing in the *British Medical Journal*, says that cases with little residual urine are operated upon without drainage one to two days after admission. In the presence of a large residue catheter drainage is employed for one to two days, and then a first-stage operation is performed. Nitch,[18] also writing in the *British Medical Journal*, says, "In nearly all cases in which primary prostatectomy is contraindicated, preliminary suprapubic drainage — in other words a two-stage operation—is preferable to an indwelling catheter". Winsbury-White[19] in a recent article states that he seldom employs urethral drainage for more than 48 hours. He also stresses the fact that after five or six days a urethritis always develops. The importance of this urethritis with its possible sequelæ is regarded with much more seriousness in Great Britain than it is on this continent.

However, a changing attitude is gradually becoming apparent here. It has found its most extreme expression in a recent publication by D. K. Rose.[20] He believes that an immediate

one-stage suprapubic prostatectomy may be performed upon 90% of patients in whom an open operation is indicated. Gross distension of the bladder and moderate nitrogen retention in his opinion do not render such a procedure inadvisable. He also states that when a two-stage operation is necessary he prefers immediate cystostomy to indwelling catheter drainage. In this latter respect his views are more or less in agreement with those expressed in a recent article from the Harvard Urological Service.[21]

> "A review of our cases of urinary obstruction in which urethral catheter drainage has been used as a means of preliminary preparation for operation revealed that the preoperative mortality and morbidity in patients who were otherwise good risks was relatively high and that complications were not infrequent. Another study of this group showed that these undesirable occurrences were directly attributable to urinary sepsis, and that in every instance this was introduced or accentuated by some form of urethral instrumentation. For this reason, we believe that a method of drainage other than the urethral catheter should be used, and therefore in the past two years we have substituted suprapubic trocar drainage for these patients."

A further advantage of trocar drainage not mentioned by the authors is that it facilitates the second-stage operation. It permits of more adequate exposure of the bladder, a more careful enucleation of the gland, and complete anatomical closure of the abdominal wall. Thus, the second stage comes more closely to resemble a one-stage operation.

HÆMORRHAGE

In the past one of the great hazards of prostatic surgery has been undue loss of blood. In all cases a considerable amount of bleeding occurs; in some the bleeding is sufficient to cause a certain degree of collapse and shock; in occasional cases death results. A certain amount of postoperative debility and morbidity can also be attributed to this cause. The new hæmostatic agents, gelfoam,[22] fibrin foam,[23] and oxidized gauze[24] will undoubtedly in the future diminish this hazard for the prostatectomy case. In this series there were three deaths directly attributable to hæmorrhage; five others died of shock. Excessive bleeding undoubtedly contributed to the shock in these latter cases, although no notes to that effect could be found in their records. Ten operative cases died of pyelonephritis. Together these two groups constitute 45% of all the operative fatalities. If hæmorrhage and sepsis could be controlled, and it seems that to a large extent they can, then a very striking reduction in mortality in suprapubic prostatectomy can be effected.

SUMMARY

Five hundred and twenty operative cases of benign prostatic obstruction from the public wards of the Montreal General Hospital are reviewed. Preoperative and operative mortality statistics are presented. The causes of death in both groups are analyzed. Cardio-vascular disease and pyelonephritis are shown to be the commonest causes of fatality.

The rôle of urethral catheter drainage is discussed, and the difference in British and American preoperative care is described. There seems no doubt that urethral catheter drainage as used on this continent gives rise to acute pyelonephritis with attendant mortality. Because of this danger catheter drainage should not be routinely and indiscriminately employed. When it does become necessary it should be used for a short period only. When prolonged drainage is required suprapubic trocar cystostomy is probably safer than the usual first-stage operation.

Pulmonary embolism, in some cases at least, can be anticipated and prevented by venous ligation. Recent experience indicates that hæmorrhage can be almost completely controlled by the new hæmostatic agents.

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RÉSUMÉ

520 cas de prostatectomie en deux temps, observés de 1937 à 1945 sont analysés. La statistique de mortalité s'élève à 12.6%. Cette statistique est juste car elle comprend tous les cas sans exception et elle est basée sur 8 années. Les causes de mort les plus fréquentes sont les maladies cardio-vasculaires et la pyélo-néphrite. Le drainage par cathétérisme uréthral est longuement discuté; il parait certain que ce procédé favorise souvent la pyélonéphrite aigue. Les indications du drainage doivent être révisées et son applica-

tion soumise à une grande prudence. La taille sus-pubienne évitera beaucoup d'ennuis dûs au drainage prolongé. L'embolie pulmonaire, complication assez fréquente pourra s'éviter par la ligature de la veine fémorale intéressée. Les complications dûes aux hémorrhagies devraient bientôt disparaître grâce aux nouveaux agents hémostatiques. JEAN SAUCIER

BATTLE EXHAUSTION— A FOLLOW-UP STUDY

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AS yet, little is known of the long-term histories of men who suffer acute neurotic reactions as the result of active warfare. Several reports[1, 2] have been published concerning the rehabilitation of psychoneurotics discharged from the services, but these do not deal specifically with those who develop battle exhaustion while in combat areas. Grinker[3] has indicated that previously-controlled intrapsychic tensions, when precipitated into overt disturbances by battle experience, do not readily become quiescent. It was the observation of most psychiatrists dealing with soldiers who had suffered battle exhaustion that many had persistent symptoms months after the cessation of hostilities.

This study was undertaken to elucidate the natural history of unresolved battle neurosis.

SOURCE OF MATERIAL AND METHOD EMPLOYED

Subjects selected for this study were soldiers who had suffered battle exhaustion and who were discharged at two demobilization centres during the months of August, September and October, 1945. All soldiers known to have suffered battle exhaustion were included, with the exception of two groups: (*a*) those with mild symptoms who had been treated by their regimental medical officers with rest and sedation, who were not evacuated and consequently on whom no record of breakdown was available; (*b*) those whose reactions had been of a protracted, psychotic type, who had been evacuated to a mental hospital in Canada and who had received their army discharge from hospital.

Each subject was interviewed by a psychiatrist at the time of discharge and the following information recorded:

(*a*) Type of breakdown: (1) anxiety symptoms; (2) acute hysterical; (3) psychosomatic.
(*b*) Type of treatment: (1) immediate; (2) delayed.
(*c*) Severity of symptoms following treatment. Type of army re-employment.
(*d*) Symptoms at time of discharge.
(*e*) Plans for future.
(*f*) Attitude of subject toward his illness.
(*g*) Pre-enlistment stability. This was rated on a four-point scale as fair, poor or very poor, on the basis of family history, childhood and adult neurotic traits and pre-enlistment adjustment.

A total of 65 cases were included in this study.

From five to six months after the time of discharge, these veterans were visited at their homes by the district psychiatric social service officer. Of the 65 cases, 55 were located and reported upon. In the remaining 10 cases the veteran had moved to another part of the country, or, neither he nor his family could be contacted after several visits. In about one-half the cases, the veteran himself was not available but the mother or wife was interviewed. In some cases both the veteran and the mother or wife were interviewed. The social worker paid particular attention to the veteran's employment history, his marital adjustment, his health and his social activities since discharge. She attempted to determine by indirect questioning the severity of, or changes in, the neurotic symptoms which had been reported at the time of discharge.

On the basis of the social worker's reports, the cases were classified as "improved", "unchanged", and "aggravated". It is realized that such a classification is subjective. The following case histories are offered as examples of each class.

CASE 1 (IMPROVED)

A.F., a 35-year old private, of average intelligence and fair stability, was evacuated from battle because of acute anxiety symptoms. He received no treatment except rest and was re-employed in a rear area within the sound of gunfire. At the time of discharge from the army he was complaining of nervousness, insomnia, battle dreams, startle reaction, palpitation and joint pains.

He was interviewed again six months after discharge. It was learned that he went to work almost immediately in a tannery. At the same time he succeeded in starting a small business manufacturing floor polish. He recently obtained a divorce from his wife and has the custody of his two children. He is living with his parents under adequate housing conditions.

His appearance is improved, he has gained weight and appears less "strained". His attitude is friendly and agreeable. He feels his general health has improved. The battle dreams and nervousness are diminishing but he is still easily startled. For recreation he goes to the movies, takes his children for walks, or occasionally plays pool with his veteran friends.

CASE 2 (UNCHANGED)

R.S., was a 28-year old signalman who developed anxiety symptoms and physical complaints after evacuation for superficial flesh wounds. He received no treatment for the psychiatric disability. At the time of discharge he suffered from nervousness, instability, anorexia, dizziness and palpitation. When seen six months later he stated that he was employed in a biscuit

factory but was dissatisfied because of the dust in the shop. The subject, his wife and 7-year old daughter were living in two rooms in the top of his mother-in-law's house. The remainder of the house was overcrowded and included several persons of low mentality and doubtful morals.

The subject was tired all the time but restless and fidgety. He slept poorly and lost weight. The noise of others in the house upset him but he would not go out except to an occasional hockey game. He would not go to a doctor.

CASE 3 (AGGRAVATED)

F.A., a 27-year old corporal, of average intelligence and good stability, was evacuated from battle because of an acute hysterical amnesia. He was treated immediately by narcohypnosis and improved sufficiently to return to combat duty, but still has startle reaction and battle dreams. At the time of discharge he was restless and depressed. He complained of stomach trouble and mild insomnia.

When interviewed six months later he was much depressed. His first job had been with a dairy but he soon "went to pieces" as it entailed working from 5.30 a.m. to 10.00 p.m. He left the job after one month and had a week's rest. He has not been able to find work since, as he has no inclination for a trade and feels mentally incapable of working at an "indoor" job. He would like to go on a farm but his wife refuses. He lived in a summer cottage until mid-winter and then moved in with his mother. He has not been able to save any of his gratuity since "all the family is living off him". His wife is pregnant and is morose and depressed. The subject has had a recurrence of his battle dreams and startle reaction. He cannot sleep half the time, and is unable to eat. He has had frequent attacks of diarrhœa. He is worried about his unemployment, his health and the future generally.

RESULTS

When the 55 cases are divided according to their condition at the end of six months, the distribution is as given in Table I, 19 cases improved, 25 cases unchanged and 11 cases worse than at the time of discharge. These three groups were then correlated with the various factors determined at the time of discharge.

TABLE I.

	Improved		*Unchanged*		*Aggravated*	
Total	*No.*	*%*	*No.*	*%*	*No.*	*%*
55.....	19	34.5	25	45.5	11	20.0

There was no relationship between the clinical state six months after discharge and the type of breakdown, the treatment, the type of army re-employment, or our estimate of previous stability. These results are shown in Table II.

A word of explanation must be introduced with regard to the small number of the total group who received intensive early treatment. This does not give a representative picture of the treatment status of the majority of psychiatric battle casualties of the Canadian Army during the war. Due to the nature of the demobilization program, most of the cases included in this study were men who took part in the invasion of the Normandy beachhead on D-day or soon afterward. Many of the men suffered their breakdown early in the campaign. This was before it was feasible to establish satisfactory psychiatric treatment centres. Other samples have shown that a much higher proportion of battle casualties received more prolonged treatment later in the campaign.

TABLE II.

	Improved (19)	*Unchanged (25)*	*Aggravated (11)*
Type of reaction			
Anxiety.....	12	13	8
Psychosomatic....	2	4	1
Hysterical.....	5	8	2
Previous stability			
Good.....	3	3	4
Fair.....	10	9	5
Poor.....	5	9	1
Very poor.....	1	1	0
Treatment O/S			
Mild sedation or none.....	16	20	8
Intensive narcosis or psychotherapy	3	5	3
Re-employment after evacuation			
Combat.....	3	3	4
Rear area.....	15	18	7
None.....	1	2	0

Table III shows the relationship between the type of neurotic complaints at the time of discharge and the clinical state in six months. There is a slight increase in the number of complaints in the group with the poorer progress, and there is a tendency for insomnia and psychosomatic complaints to be more frequent in this group. These findings are not statistically conclusive.

TABLE III.

No. of men at discharge complaining of	*Improved (19)*		*Unchanged (25)*		*Aggravated (11)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Nervousness and restlessness.....	13	68.0	18	72.0	9	82.0
Depression, hostility, seclusiveness, shyness.....	6	31.5	10	40.0	4	36.0
Battle dreams.....	3	15.0	6	24.0	3	27.0
Startle reaction...	9	47.0	12	48.0	6	55.0
Insomnia.....	4	21.0	7	28.0	7	64.0
Psychosomatic disturbances.....	11	58.0	16	64.0	10	91.0
No complaint.....	2	10.5	2	8.0	1	9.0
Average No. of complaints per man.....	2.25		2.75		3.5	

The social worker noted that many of these veterans were carrying a heavy load of environmental difficulties. An attempt was made to assess the number of external causes for anxiety in each case. These included difficulty in ob-

taining employment, marital disharmony, wife overseas, housing problems, poor relationship between subject and his family, and financial difficulties. It is impossible of course to reduce such stresses to mathematical values and only the more obvious and manifest difficulties came to the attention of the worker.

In studying these cases in this way, however, one is struck by the tendency for lack of improvement to be associated with multiple environmental stresses (Table IV). In making this observation we are aware that some of the difficulties may well be the result of the patient's illness rather than an aggravating factor. This is true of marital and employment problems but unimportant in the case of housing difficulties and separation from the wife because of transportation "hold-up".

TABLE IV.

No. of environmental sources of anxiety found	*Clinical conditions*					
	Improved		*Unchanged*		*Aggravated*	
0.....	6	32%	3	12%	0	
1.....	9	47%	13	52%	3	27%
2.....	4	21%	7	28%	5	45%
3.....	0		2	8%	2	18%
4.....	0		0		1	9%

DISCUSSION

Our findings bear out the impression that psychiatric disturbances precipitated by the severe mental trauma of warfare are not entirely benign, and that physical and mental symptoms persist into civilian life.

We do not feel justified in indulging in further generalizations on the basis of the above data. The underlying psychopathological mechanisms responsible for the difference in reaction in each case were not explored. We were impressed by the variation in the number of "real" stresses among the three groups. This might be considered as a manifestation of the inability of the damaged ego to adapt to external dangers. At the same time we know nothing of the internal threats such as guilt and dependency needs which undoubtedly are contributing factors. Also the absence of a control group must be recognized. Mild anxiety reactions are present almost universally among veterans during their rehabilitation period. In some, delay in realizing long-postponed ambitions, difficulties and domestic problems, cause fairly severe psychiatric states. The incidence of these reactions in the veteran population from which our sample is drawn is not known. We were able to obtain the overall employment figures for veterans during the period of our study. However, we felt that the use of the concept of employment alone as an index of emotional adjustment had been overstressed, and therefore we did not consider that it would be contributory.

One feature of our follow-up study which warrants discussion concerns the treatment of these veteran subjects. At the time of discharge, the army psychiatrists considered that about 50% of the group would be helped by some form of psychiatric treatment. Only 18% expressed themselves as interested in treatment at that time. Of the 55 veterans contacted six months after discharge, at least 36, or 65% were considered to be in need of treatment. Of these 36, there were 21 who had sought no medical aid whatsoever, although in several cases they had been urged to do so by their families; 15 had sought medical care, but of these, 6 were said to be for minor physical illnesses, such as scabies, burns, abrasions, bronchitis, etc., with no mention made of the help being sought for the nervous symptoms. Only 8, or 25% of those who in our opinion needed treatment, had sought medical advice because of their nervous complaints. Of these, 5 had consulted their family physician and only 3 had taken advantage of the psychiatric services of the D.V.A.

It was our impression that we were dealing with men whose difficulties and treatment-needs were increasing rather than decreasing, difficulties which may have future social implications, and treatment-needs which will have to be met eventually. Undoubtedly many of these men will turn to their family physicians for help. May we suggest that the general practitioner will find his most fruitful therapeutic approach in frank and searching discussion of present situational factors. Dealing with these factors, he may find the social agencies and veteran's organizations helpful allies. In the absence of environmental factors, we suggest that the cases be referred to the nearest D.V.A. psychiatric clinic for more specialized methods designed to deal with underlying neurotic mechanisms.

SUMMARY

A follow-up study of 55 cases of battle exhaustion is reported. No correlation is found

between the degree of clinical improvement six months after discharge, and the type of breakdown, nature of symptoms, previous stability, or early treatment. Present sources of anxiety in the environment apparently contribute to the lack of improvement.

This study was carried out through the kind permission of Col. A. E. Lundon, D.M.O., M.D. 3. We would like to express our appreciation to Capts. E. J. Rosen and C. Fisher for assistance in collecting data.

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PRIMARY POSTOPERATIVE HÆMORRHAGE IN TONSILLECTOMY*

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THE wholesale removal of tonsils and adenoids has received much criticism from time to time. The criticism is just so far as operation on a wholesale scale is condemned, but those who suggest that the removal of tonsils in children is of doubtful value therapeutically are flying in the face of common clinical experience. No doubt the tonsils are often wrongly condemned, and still worse, suffer mutilation at the hands of the inexpert. It is, however, the common experience of throat surgeons, physicians, and parents, that excellent results follow operations skilfully performed on suitable cases.

The operation of tonsillectomy when it is well carried out is attended with little morbidity or mortality, nevertheless there is one serious complication that must always be reckoned with: primary hæmorrhage may be profuse and reactionary hæmorrhage may occur within twelve hours following operation.

Hæmorrhage is always a source of great anxiety for all concerned, the parents, the nursing staff and, not least, the surgeon; it is a dangerous complication and one that must be dealt with immediately it is recognized to be serious. The importance of postoperative bleeding in tonsil operations is indicated by the vastness of the literature on the subject. A striking allusion is found in a paper by Loeb.[1] In a collection from various sources noting 444 fatalities attending operations on the ear, nose and throat, meningitis topped the list with 168 deaths. Hæmorrhage came next with 76. Of the 76 deaths due to hæmorrhage, 62 were due to tonsillectomy with or without adenoidectomy. This is a serious indictment for an operation which, although it should not be regarded as a minor procedure, should have no fatal hæmorrhage, as reports of 77,732 operations from 3 clinics show.

Certain general conditions predispose to hæmorrhage, notably the blood dyscrasias. Local predisposing factors such as inflammation are also well recognized. Hæmorrhage is often attributed to deficient clotting; on this theory many types of serum and calcium medications have been advocated and used. Calcium compounds are a convenient and popular form of medication. The rationale of this treatment assumes that there may be a calcium deficiency, as it is well known that calcium plays a major part in the formation of blood clot. As low serum calcium is associated with obvious clinical symptoms, it seems unlikely that the concentration in children otherwise suitable for operation, ever falls below the minimum required for efficient clotting.

It is difficult or impossible to determine the cause of excessive bleeding which takes place in occasional cases. Over a period of years at the Children's Hospital of Winnipeg we carried out bleeding and clotting tests routinely on all our tonsil and adenoid operative cases; in no case to my knowledge where severe bleeding took place postoperatively was the bleeding or clotting time lengthened or found abnormal. This has been the experience of others in widely separated parts of the country. I have, therefore, discontinued having the test done on any of my patients; it is true that the test would pick up a hæmophilic, but these rare cases are marked by the history.

The prothrombin level of the blood may be decreased in certain cases of unexplained bleeding. Wintrobe[2] says that prothrombin is low in the newborn and in infancy and that vitamin K is in some way associated with its formation; he says further that hypoprothrombinæmia may occur as the result of several factors—drainage of bile, consumption of prothrombin due to hæmorrhage, deficient diet and temporary liver damage. The administration of acetylsalicylic acid[3] is also said to lower the

* Delivered at the monthly meeting Misericordia Hospital, Winnipeg, January, 1947.

prothrombin level. A quantitative determination of the prothrombin in these cases and the administration of vitamin K if it is found low would be helpful.

It is generally agreed that the tonsil is supplied by five branches of the external carotid artery, an important fact as indicating the vessel to ligate in an emergency. The ascending pharyngeal comes off well above the bifurcation, so that it might easily be missed in an emergency ligation of the external carotid.

According to Fetterhoff[4] there are six arteries which enter the tonsil: the artery to the plica triangularis; the superior artery at the posterior aspect of the upper pole; the posterior artery, entering the junction of the lateral and posterior surface above the equator. There are three inferior arteries; one enters the inferior margin below the equator; a second runs up the middle of the outer surface and enters a short distance above the equator; a third enters the middle of the lower surface near the dorsum of the tongue. The two last mentioned are rather large vessels going to the tongue. Then there are the venous trunks which sometimes bleed copiously during operation.

Certain factors will reduce the occurrence of postoperative hæmorrhage; these factors have to do with technique. A carefully executed operation will eliminate some of the hazards brought about by bleeding. The operation should be carried out with the greatest of care, attention being given, and respect paid, to all peritonsillar tissue. These details are important as well if good cosmetic results are to be obtained. I need hardly elaborate on this; we all know the appearance of the throat that has been badly operated on: many of these people complain of throat trouble which is often permanent and unfortunately in many cases we can do nothing to correct it. In rare cases a bad postoperative result is not the fault of the operator, it occurs as a result of infection, with subsequent sloughing and sclerosis.

Tonsillectomy like any other operation is never to be rushed or taken lightly. We talk of a "T and A"; are we not slaves to the phrase? We are dealing with two operations which are too often performed at the same time. I think the adenoids should be removed if they cause nasal obstruction or interfere with the child's feeding, and the tonsils at a later date if they are definitely diseased.

The very best facilities including instruments, assistants, anæsthetist, etc., should be employed. The patient is not to be sent from the operating room until all bleeding is controlled. Antiquated methods to accomplish this should not be used; there is no substitute for finding the bleeding points and ligating them. In spite of these precautions however, we do have occasional cases bleed severely as I have already mentioned. When it does occur it is the duty of the nursing staff or the intern on the service to recognize that danger is imminent. Small children will bleed without giving any alarm, they swallow the blood and for a time at least objective signs may be overlooked. It will not be long, however, if bleeding continues before these signs become apparent; they will manifest themselves strikingly in the general appearance of the child. He becomes pale and clammy, the lips are blanched, the pulse is fast and weak, and something must be done promptly to arrest the bleeding and replace the body fluids. The bleeding must be controlled, administration of blood plasma or whole blood is often necessary; delay in carrying out these measures may be disastrous. McKenty[5] carried out investigations over a period of years by measuring the amount of blood loss in nose and throat and ear operations. He concluded that it would seem that bleeding during these operations calls for more care than it has been generally given, especially in young subjects; that measurement of blood loss is a feasible routine procedure in such operations; and that such measurements are of important clinical use. I fully agree with his conclusions but have not followed the method of measuring the amount of blood loss. I have striven to avoid an excessive amount of bleeding by adhering to the practice I have mentioned above. When in spite of these precautions bleeding does occur I think the danger signs are sufficiently marked to be recognized by those entrusted with the patient's care.

SUMMARY

Primary postoperative hæmorrhage in tonsillectomy is a serious complication. How is the bleeding to be stopped? Adrenalin chloride, tannic acid and other vaso-constrictors may be used. Oxidized cellulose is useful too, the material appears to be absorbable and non-irritating. Hæmostatic serums, snake venom, etc., are often helpful. When the bleeding is definitely

from spurters which can be seen, the only efficient and safe way to deal with them is by ligature. Ligation of the external carotid artery may be necessary in severe cases where all other methods fail.

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529 Medical Arts Bldg.

EXTRINSIC FACTORS IN THE EVALUATION OF B.C.G.

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ONE would expect experimentation on lower animals always to be conducted to the very end before a biological is recommended for its use on humans. Unfortunately, again and again this golden rule is disregarded, the transgressors not even being aware of it. Chronic diseases like tuberculosis are the ones where mostly *intra muros peccatur et extra.* However, in acute infections expediency has also been the source of a few sins. The most simple serological reaction, agglutination, was the main guide in the choice of antityphoid vaccine in the first world war, until the mouse test was demonstrated to be a far more reliable indicator of true immunity.

Experimentation with laboratory animals such as guinea pigs, is, as a rule, considered the preliminary step in the evaluation of any vaccine recommended as a prophylactic agent or any drug aimed at the cure of tuberculosis. Yet in the early experiments with the B.C.G., inoculation of guinea pigs gave rise to characteristic lesions produced by *mycobacterium tuberculosis.* This fact raised the question of the harmlessness of the vaccine. I had to slaughter some of our vaccinated calves in order to turn down the suspicion that B.C.G., instead of preventing tuberculosis, was producing the disease. In the campaign for the larger use of B.C.G. vaccine in humans which is being launched at present in the United States, the emphasis is put on the results which were obtained in Europe, in Central and South America, and on American Indians. It is worthwhile recalling that experimentation on bovines paved the way to the B.C.G. vaccination on humans. The B.C.G. itself is an attenuated *bovine* strain, and its harmlessness and immunizing power was proved by experiments conducted on bovines. Among those experiments, the ones which were carried out in Lombardy were decisive in many respects. They gave full evidence that even when the vaccination is practiced on newborn calves, living in a very infective milieu, the incidence of tuberculosis is reduced to half as compared with the incidence in non-vaccinated controls.

Though the natural resistance in newborn humans might be higher than in newborn calves, due to the circumstance that B.C.G. vaccination of humans is a *cross immunization,* hardly better results ought to be expected in a heavily infected milieu. On the basis of bovine experimentation we would caution against an excessive optimism.

Perhaps Calmette and Guerin went too far in the attenuation of the virulent bovine strain since harmlessness was the main prerequisite. If so, less attenuated strains which were found harmless on bovines might be resorted to. The experimentation on bovines which proved so valuable in providing the fundamentals to B.C.G. vaccine ought to be resorted to also in the evaluation of antibiotics which are tested on human beings merely because a bacteriostatic activity showed up *in vitro* and in the guinea pig test which is sometimes deceiving.

My purpose in writing this paper is certainly not to discredit this vaccine, which rests on a sound foundation. On the contrary, the fifteen years of unceasing experimentation; the results achieved in the specific prophylaxis of bovine tuberculosis by the 200,000 doses of B.C.G. delivered to veterinarians and farmers during that time; the careful postmortem examinations of a number of vaccinated cattle; all these facts have fostered a steadfast faith in its intrinsic efficiency. I would merely draw the attention to a few extrinsic factors which might explain the divergent views held by a few experimenters in this field. At the International Veterinary Congress in London (August, 1930), where antitubercular vaccination was discussed

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in a plenary meeting, the report presented by the late Dr. Watson, at that time chief pathologist at the Animal Diseases Research Institute, Department of Agriculture, Hull, Quebec, denied the value of B.C.G. His opposition was based on unfavourable results which had been observed in co-operative studies carried out on cattle jointly by the National Research Council, the Department of Agriculture, and other Canadian Institutions. It is difficult to reconcile the fact that at the same time B.C.G. had been found harmless and giving increased resistance to tuberculosis in experiments conducted on some 250 calves in Southern Alberta by Dr. Rankin, dean of the Faculty of Medicine and Professor of Bacteriology and Hygiene at the University of Alberta.

Guerin and myself, like Rankin, were on the other side of the fence. Sir John McFadyean, the most authoritative of British veterinarians, took a rather conciliatory attitude. Guerin, being the collaborator of Calmette in the development of B.C.G.—his share is even consecrated in the name given to the vaccine, Bacillus Calmette Guerin—was, of course, its most strenuous advocate. As to myself, I maintained that B.C.G., when tested on calves, was both harmless and imparted a greater resistance to intravenous inoculation of a virulent strain. The harmlessness of B.C.G. actually had been challenged by the Viennese immunologist Rudolf Kraus. The transitory formation of tubercles noticed after intraperitoneal or intravenous inoculation to small rodents had been wrongly looked upon as a progressive tuberculosis. The surmise that the B.C.G., instead of preventing, gave rise to tubercular lesions in the calves which were being immunized with B.C.G., had been turned down by postmortem inspections of vaccinated calves. The absence of tubercular lesions and the healthy conditions of all the viscera observed in a number of calves which were slaughtered after being given the B.C.G. prepared by the Istituto Vaccinogeno Antitubercolare, (The Italian Centre for Antitubercular Vaccination), had proved its harmlessness even to our opponents. My belief in its ability to increase the resistance of bovines to tuberculosis was strengthened by the experiments in which the I.V.A. embarked after 1930 with the assistance of a committee including Faculty members of the Schools of Human and Veterinary Medicine of the Universities of Milan and Pavia.*

Two main experiments which were conducted from 1931 to 1933 showed that the vaccinated calves withstood also exposures to natural sources of infection offered by cows affected with open tuberculosis. In one experiment the calves were placed face to face with the cows and were therefore confronted with the infection at its worst. Actually when both the vaccinated calves and the controls were slaughtered, tubercular lesions were found to have developed in one out of five vaccinated calves and in all controls. In the other experiment when the calves, being flanked by the cows, had to endure a less infective load, no tubercular lesions at all were found in the vaccinated calves, though all the controls but one were affected. The importance of these experiments should not be minimized because they filled a gap, since before this, not to mention the conflicting results of the Canadian researchers, no proof had been supplied that B.C.G. was able to protect against natural infection through exposure. One might wonder why Calmette and Guerin did not comply with this prerequisite. Its urgency though had been acknowledged by themselves in the past for they were conducting in 1915 in Lille an experiment of this kind on bovines vaccinated with a less attenuated strain, when the German invasion brought it to a premature end.

Anyway, the Italian centre not contented with these results, embarked in 1934 on a large experiment aimed at establishing whether the resistance of bovines could be maintained by means of annual revaccinations throughout their useful life. This experiment was started in the fall of 1934 with 90 new-born calves, 45 of which were held as a control. The data available 4½ years after its start—when due to political intrigues the I.V.A. closed in the fall of 1939—showed that the tubercular infection in the vaccinated group had been cut down to a half. Through the data gathered by the veterinarian who continued to carry out the clinical and postmortem examinations as accurately as possible, it would appear that the ratio has remained the same in both groups as it was after 4½ years.

* The main collaborators of the Istituto Vaccinogeno Antitubercolare in this large scale experimentation were Dr. Zoia, M.D., chairman of the committee, Dr. Bisanti, V.M.D., Dr. Gerosa, V.M.D., Dr. Gentili, V.M.D., Dr. Pepere, M.D., Dr. Veratti, M.D., Dr. Zorini, V.M.D.

These results seem to be satisfactory from the economic standpoint. I received the gratifying news that both veterinarians and farmers, who never discontinued the B.C.G. vaccination even during the war, now that Italy is being restored, plan to intensify the propaganda for its larger use.

What do the experiments on bovines tell us when viewed as stimuli to launch a drive for its applications on humans? It would be interesting to guess what the other medical members of the I.V.A. committee might think of the large scale use which the United States are launching right now. Their interest too centred on the chance to draw from the observations on the vaccinated bovines some conclusions as to the opportunity of intensifying the premunition in the human race.

Our experiments in my mind are emphasizing the importance of accessory factors in the development of tuberculosis and consequently in the ratio of the defense put up by the vaccine. The elements which differentiate our last experiment, which provided only a 50% reduction in the ratio of the tuberculosis from the two where a complete protection, respectively an 80% reduction had been attained, lie mainly in its lack of any quarantine and its lifetime duration of exposure.

In the experiment where none of the vaccinated calves was affected, the exposure was delayed. It began when the calves were already six months old and lasted only six months; actually also in the control group one calf did not show any lesion when slaughtered.

In the experiment where one vaccinated calf was affected the spreading of tubercle bacilli to the calves had been given its best chance by posting the cows face to face with the calves. Moreover, the exposure set in earlier, that is the infecting cows were introduced into the experimental barn—which had been arranged for the purpose and where the calves had been supplied with milk from healthy cows—when the calves were only two months old, and it lasted almost ten months. Under the circumstances tubercular lesions were found in all the controls.

The divergence of opinions among the three reports which were presented at the International Veterinary Congress in London in 1930 might become understandable through the analysis of the factors which are brought to light by the above experimentation. The French reporter's favourable conclusion was founded on the high degree of resistance which vaccinated heifers had shown when given virulent tubercle bacilli intravenously and on the results attained in field experimentation; and so was mine at that time because it was based on similar experiments with calves and on the results in the field. Dr. Watson's contrary belief was drawn from the fact that after exposure to natural infection the percentage of his B.C.G. vaccinated cattle showing evident tuberculous lesions was 81.2 as compared with 73.3 in unvaccinated control cattle. Only upon complying with the conditions of isolation recommended by Calmette and Guerin, waiting 4 to 6 weeks before exposing the calves to infection, were the lesions found to be of less extent in the vaccinated animals than in the controls. Yet Watson's contentions that the B.C.G. itself could bring about a progressive tuberculosis, at least in laboratory animals, and that the greater tendency of lesion-free lymphnodes from vaccinated cattle to harbour virulent tubercle bacilli might create dangerous "carriers" of the disease, appear at present to be wrong even though the observations as such are undoubtedly correct. The research work carried out after 1930 has brought to light the fact that the greater resistance to tuberculosis induced by vaccination is accomplished through concentration of the virulent bacilli (to which the experimental animals are exposed) in the vaccinal nodule and in the tissues, specifically the lymphnodes, on which the normal defense mechanism rests. As a matter of fact the concentration of the invaders is the prelude to their destruction (phenomenon of anachoresis).

The experiments which we were able to conduct after the London meeting would explain also the divergence of opinions on the protective value of the vaccine in so far as it would appear that actually the efficiency of the B.C.G. is curtailed whenever (*a*) the load of infection offered is above a certain level; (*b*) the vaccine is administered to newborns who already live in a contaminated milieu; (*c*) the interval between vaccination and exposure is not sufficient for the development of the resistance. The efficiency of B.C.G., though curtailed, was never completely nullified in our experiments. On the other hand the expectancy voiced in 1938 at the meeting of experts summoned in Paris by the League of Nations, that a complete protec-

tion might be achieved if the exposure were delayed until the immunity (resistance) had reached its peak, was not fulfilled either. The resistance developed two months after the subcutaneous vaccination at birth was not sufficient to prevent the entrance of the tubercular infection in one out of five calves exposed for ten months to the infection at its worst. The protection was 100% only in the vaccinated group which was exposed at the age of six months for six months altogether to a lesser load of infection.

We ought to keep in mind always that B.C.G. vaccination in humans is actually a cross immunization, that is, the higher resistance is produced by an attenuated *bovine* strain while the infection as a rule is due to the human type of *mycobacterium tuberculosis*. In the calves the prophylactic vaccine and the infective organisms being homologous, that is, both of bovine origin, *ceteris paribus* the protection is likely to be more effective than in human beings. The poor results attained by Dr. Aronson with some Indian tribes are therefore quite understandable. Unfortunately only a few vaccinations were carried out on Indian infants of the age when susceptibility is at its peak. One may wonder whether the morbidity rate among them would not be as high as in the bovine species vaccinated and kept in the infective milieu. If the results obtained in the Indian reservations are compared with the ones obtained by the vaccination of nurses and interns exposed to tubercular infection in hospital wards and in sanatoria, one is aware of the importance of such extrinsic factors. Actually vaccination of nurses and interns has been carried out with good results in Norway, Canada, and elsewhere.

In my mind, however, the results are not due to a greater efficiency of B.C.G. in human beings, but rather to the age at which these vaccinations are carried out. The circumstance that in our last experiment the ratio of tuberculosis remained the same in the cattle slaughtered at a later date as it had been found to be 4½ years after the first vaccination, would emphasize that in adults either the greater susceptibility has come to an end or the increase in resistance is not so easily impaired.

Vaccination of adolescents and adults is a safe prophylactic measure against a mild and not continuous exposure, such as the one nurses and interns are confronted with. It has to be implemented with a period of quarantine in order to give the tissues a chance for the development of an adequate resistance before exposing the subject to the infection. Whenever the incidence of infection is above a certain level it might be advisable to resort to a more active vaccine. In my mind the safety of the procedure is due to the circumstance that with the increasing age the helplessness in dealing with tuberculous matter subsides and a more appropriate responsiveness sets in. Moreover, the negative tuberculin test indicates that the natural resistance had been so far able to dispose of any source of tubercular infection to which the subject might have been exposed. The considerable protection brought about by the B.C.G. vaccine in adult animals can be demonstrated even in the laboratory. In an experiment set up by the I.V.A., the rate of tuberculosis among mature guinea pigs exposed to infection offered by artificially infected guinea pigs was found to be nil as compared with 26.6 to 41.6% in the non-vaccinated controls. (See *Patologia Comparata della Tubercolosi*, Vol. I, No. 1.)

Behring's remark still holds that tuberculosis is the last note of a melody which had been sung to the nursling in the cradle. Therefore the major problem in prevention of tuberculosis is to avoid the infection of the helpless infant. The difficulties in increasing the resistance of nurslings lie in the circumstance that it is not easy to obtain, even after a quarantine of two months, protection against unmitigated exposure. It is likely that such a load of infection is offered often in the barns where field vaccinations are practiced. One might question whether even the peak of immunity developed by B.C.G. does give complete protection against a severe exposure. Of course also the other hypothesis stands that after two months the peak might not yet have been reached. If the first hypothesis is true a stronger vaccine ought to be resorted to. Through passages on bile media several attenuated strains of bovine tuberculosis have been prepared by the I.V.A. Their gradual loss of virulence was followed through inoculations on bovines, rabbits, and guinea pigs. The data proving their harmlessness are to be found in a paper issued in *Biochimica e Terapia Sperimentale*, **36**: 304-317. A first attempt to use one of the attenuated strains for revaccinating nine bovines was inserted in our

last experiment on 90 bovines. I expected to receive from my collaborators the data concerning this attempt. However, a comparison of the immunizing power of the I.V.A. vaccine with B.C.G. could be conducted on guinea pigs, at least in a preliminary way, along the pattern given above.

Some light is thrown upon another puzzling problem by our experiment on 90 bovines. The experiments conducted on bovines have shown that annual revaccinations ought to be carried on in order to insure a lasting resistance. It would appear from our experiment where revaccinations were discontinued after 4 years that the resistance which had been attained at that time is sufficient for the whole life.

This observation agrees with that which is being observed in adults of the human race. Also, their protection apparently does not need to be renewed while in the young one cannot but maintain the higher resistance by means of revaccinations.

THE FUTURE OF CANADIAN PSYCHIATRY*

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THE outlook for genuine advance in Canadian psychiatry is much more promising today than was the case in 1939. The reason for greater optimism now can be attributed to our war experience during which mental health issues became matters of prime concern, not only to psychiatrists and to their colleagues in the medical profession, but also to the general public. The fact that 10% of our young Canadians of military age were found to be mentally unfit for the armed services furnished food for thought, as well as the circumstance that, exclusive of actual wounds, 1/3 of all discharges from the Canadian army were due to psychiatric disabilities. Findings of this nature focussed attention on the magnitude of the mental hygiene problem and stimulated a widespread desire for the improvement of arrangements in this country for the treatment of mental and nervous disabilities and for the safeguarding of mental health. While an awakened interest and an urge for progress do not necessarily guarantee the actual taking of forward steps, nevertheless these factors do create a favourable situation in Canada for constructive developments.

It is worth remembering that the first world war paved the way for a national mental hygiene movement and that, through surveys, public education and close collaboration with governmental agencies, there ensued progress in dealing with the major psychoses and mental deficiency. Governments were induced at that time to spend 25 million dollars on capital account for the extension and improvement of mental hospital plants. Medical and nursing services in mental hospitals were strengthened. An impetus was given to occupational therapy. There was effected a modification of the public attitude toward mental illness that facilitated the treatment of the psychoses in their incipient phases. Elementary school systems commenced to make specialized arrangements for the training of mentally deficient children, and so on.

I cite these developments that followed within a ten-year period after the first world war because I am confident that history can be made to repeat itself, and that we can achieve much in the next decade if we have clear-cut objectives that are in line with our mental hygiene needs in Canada and that are consistent with a sound medical and psychiatric outlook. We must be prepared, of course, to undertake careful planning and to seek the cooperation of those who can help us reach our goals.

In surveying present needs we are impressed with the fact that many areas in our field present challenges for more effective services. It is evident in this connection that much must be done during the next decade to provide more adequate attention to the psychoneuroses, to psychosomatic conditions, to child guidance, to industrial mental hygiene, to the major psychoses—with particular attention to cases with a good prognosis—to mental deficiency, to epilepsy, to alcoholism, to drug addiction and to other psychiatric groupings. With these needs in mind, there should be vigorous and consistent efforts to attain the following objectives: (1) the improvement of the quality of Canadian psychiatry; (2) the strengthening of undergraduate psychiatric training in medical schools; (3) the extension and improvement of

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mental health clinics; (4) the further development of psychiatric departments in general hospitals; (5) the provision of mental hygiene training for public health personnel, teachers and social workers; (6) the improvement of mental hospitals; and (7) the promotion of psychiatric research.

These objectives are worthy of serious consideration, and I will be bold enough to make a few comments in regard to them.

THE IMPROVEMENT OF THE QUALITY OF CANADIAN PSYCHIATRY

To give effective direction to mental health endeavour in Canada, there is need for more than 500 capable psychiatrists who have had the advantages of thorough training in their specialty. This fundamental requirement has not as yet been adequately met. Among our 300 physicians in the Dominion who are now engaged in psychiatric activities there are many who have been deprived of the opportunity for postgraduate work under able, scientific leadership. This lack is keenly appreciated by the men concerned. In response to a recent questionnaire, 135 Canadian psychiatrists out of 211 who sent in replies, or 64%, expressed themselves as wanting further training.

Now, to meet our psychiatric training needs, there are a number of requirements that seem to be essential. They can be listed as follows:

1. The expansion and strengthening of psychiatric postgraduate facilities in our larger university medical centres.
2. The provision of fellowships to approximately 100 promising and mature men who have had a good grounding in psychiatry and who might be capable, after a year's further training, to act as teachers as well as clinicians in such settings as mental hospitals, general hospitals and mental health clinics.
3. The granting of a year's leave of absence on salary every five years for postgraduate work to psychiatrists in publicly maintained services.
4. The provision of opportunities for a five-year term of training and service, with modest remuneration, for promising young graduates in medicine who wish to prepare themselves for psychiatric work in the community.

I can visualize two stages of development in making arrangements in Canada for the training of psychiatrists. The first stage that might well take five years would involve the strengthening of university medical centres plus the training and placement of a sufficient number of psychiatric leaders in mental hospitals, general hospitals and mental health clinics so that these facilities in turn could add their quota to psychiatric training. The second stage, commencing as soon as practicable, would entail the provision of thorough training to young men entering the field of psychiatry who desire to prepare themselves for service in the community. And there would be involved for these men, as I have already intimated, a five-year term of training and service with their first year in a mental hospital for experience with the major psychoses; with their second year in a university medical centre for intensive work in neurology and internal medicine; with their third year in a general hospital for service and experience with the psychoneuroses and psychosomatic conditions; with their fourth year in a mental health clinic; and with their fifth and last year of training in a well organized psychiatric institute.

The financing of these training arrangements would involve an annual expenditure of approximately $500,000 and the burden should very properly be borne by governments. This sum of $500,000 would represent the addition of only 2½% to the amount that is now being spent by governments in this country in the financing of our public mental hospitals.

It seems to me that there is ample justification for the appropriation of tax collected funds for the furtherance of psychiatric training. In the main, our governments have already assumed a major responsibility for psychiatric treatment and care. The services provided by governments have frequently suffered, however, because of a failure to attract and to retain first class men. By making training an integral part of government services, there will be provided an incentive and a stimulus to men of ability. And there will be rewards to the state through the raising of the general level of the mental health of our Canadian population. In this regard it should be noted that the greatest opportunities for psychiatry are in the general community and that, without government supported training programs, it will be difficult or impossible to provide adequate psychiatric staffs for general hospitals, child guidance and mental health clinics.

THE STRENGTHENING OF UNDERGRADUATE PSYCHIATRIC TRAINING IN MEDICAL SCHOOLS

It is an unquestioned fact that the active participation of the whole body of the medical profession is essential for genuine mental hygiene progress. This being the case, it should be our aim to place undergraduate psychiatric education in the medical schools of Canada on a

thoroughly sound basis. The teaching of psychiatry in the university will be successful in the degree that it infuses itself into the whole theme of the medical school. It should not remain a separate entity but should be integrated with the teaching of medicine, surgery, pædiatrics and other clinical subjects. Its primary function is not to teach the psychoses but to give an understanding and to teach the management of the patient who has both functional and organic diseases. Psychiatric instruction should begin in the early years of the medical course. At the time that the anatomy of the individual is being taught, a course should be given in normal personality development in childhood and adult life. In the next year, the teaching of organic pathology should be accompanied by psychopathology. This should include the development of abnormal personality reactions and psycho-dynamic factors underlying the various clinical entities. In the clinical years, the course should be planned to stress the normal emotional experiences of sick people; the diagnosis and treatment of psychosomatic conditions; the classification of diagnostic syndromes; and the recognition and treatment of the psychoneuroses and common functional conditions.

The medical student should also be oriented with a preventive outlook. He should be taught to think, not only in terms of maladjustment, but also in terms of positive mental health. He should get the conception that, aside from disabilities to which special tags and designations are given, and aside from the psychoses and psychoneuroses, there are to be found among all patients varying degrees of mental health. And he should be made aware of the conditions that favour mental health and he should be trained in techniques for its appraisal.

Several of our medical schools have made notable strides in psychiatric education during recent years. This is an encouraging development. There is urgent need, however, for further progress with more teaching in the general wards and out-patient departments of general hospitals.

The Extension and Improvement of Mental Health Clinics

It should be our aim to multiply and strengthen our community mental health clinic resources in this country. At present, we possess only 10 clinics that are organized on a full-time basis and that have necessary staffing of a psychiatrist, a psychologist and a social worker. At the very minimum, we need 20 additional full time clinics and at least 40 half time clinics that would entail an annual cost to governments of approximately $800,000. This would mean the adding of only 4% to existing governmental expenditures on mental hygiene undertakings and would make possible a marked contribution to child guidance; to the treatment of individuals of all ages who are experiencing difficulty in their adjustment; to the rehabilitation of patients who are discharged from mental hospitals; and to the promotion of positive mental health.

Many sections of Canada are contemplating the establishment of new clinics, with one medium-sized city working out a plan of shared financing by the Department of Education, the Department of Health and the Community Chest.

The Further Development of Psychiatric Departments in General Hospitals

To promote a closer partnership between psychiatry and general medicine, and to stimulate progress in the treatment of the neuroses and psychosomatic conditions, the trend should be encouraged of including psychiatrists on the staffs of our larger general hospitals. Appointments might well be restricted to men who combine a competence in psychiatry with a good grounding in internal medicine and neurology. These men could with advantage divide their time between out-patient clinical services and ward work. Where hospital appointments are on a half-time basis for non-paying patients, there should be subsidization out of public funds. This is necessary because psychiatrists are at a disadvantage as compared with specialists in other fields in regard to their ability to make a reasonable livelihood if restricted to half time in private practice. Psychiatric consultations are time-consuming, with an average period of an hour required for each session; and fees are not commensurate as a rule with the services rendered.

At the present time in Canada indigent patients with neuroses are not for the most part receiving the intensive treatment they may require. To meet this situation, the plan adopted by the Department of Veterans' Affairs for ex-service personnel afflicted with neuroses should be extended to the civilian population. The plan involves the subsidization of psychiatrists out of tax-collected funds.

THE PROVISION OF MENTAL HYGIENE TRAINING FOR PUBLIC HEALTH PERSONNEL, TEACHERS AND SOCIAL WORKERS

Psychiatrists and the medical profession working by themselves cannot be expected to meet all the needs that are involved in the safeguarding of the mental health of our people. For this huge task there must be effected a partnership with public health nurses, teachers, social workers and with other groups that contribute to human welfare. This partnership is essential in fostering those important aspects of mental hygiene endeavour that relate to the prevention of mental and nervous disabilities and to the objective of raising the level of the efficiency, the wholesome adjustment and the quality of living of all of our citizens. In other words, there is required in our field the assistance of many allies or co-operators who, to be effective however, must be trained in mental hygiene and given the opportunity to work in close liaison with psychiatrists. To bring about progress in this regard, there should be developed throughout Canada mental hygiene institutes under psychiatric auspices for the training of teachers and community workers. While the groundwork has been laid for such activities in various parts of the country, the time has arrived for the extension and strengthening of training programs; and there is thus presented a challenge for psychiatric leadership and statesmanship.

THE IMPROVEMENT OF MENTAL HOSPITALS

In the main, our public mental hospitals compare most unfavourably with our general hospitals when viewed from the angles of adequate financing, clinical and scientific standards of work, ratio of hospital personnel to patient populations, freedom from overcrowding and contributions to medical knowledge. The relative backwardness of public mental hospitals in Canada and other countries has retarded the development of psychiatry and has hampered the effective treatment of the mentally ill. This unfortunate situation could be changed during the next decade if Canadian psychiatrists and their colleagues in the medical profession were to join forces with community leaders in working out plans for the organization and financing of mental hospitals that would truly reflect the best practices and arrangements that modern psychiatry can evolve. In any approach to intelligent planning, there might well be raised such an inclusive question as this: How should mental hospital centres be organized to make adequate provision for long term, intensive, individual treatment, when necessary, in ideal surroundings, for patients with a favourable prognosis; for the treatment of special groups, *e.g.*, the aged and infirm; for the provision of decent, congenial, uncrowded living arrangements for chronic populations, with opportunities for varied occupations and pursuits; for genuinely constructive programs for the rehabilitation of discharged patients; for the attraction, training and retention of capable staffs; and for the integration of hospital work into broad programs of health, welfare and educational activities of the communities they serve?

There is no question that the Canadian public can be roused to back governments in developing adequate mental hospital facilities. But it devolves upon psychiatrists and the medical profession to provide blue prints to indicate desirable lines of advance.

THE PROMOTION OF PSYCHIATRIC RESEARCH

Less than $30,000 is being spent annually in Canada on psychiatric research. Much more adequate funding is necessary. If we neglect the task of pushing forward the boundaries of our knowledge in this field, we will continue to pay a heavy price in the Dominion in terms of widespread mental invalidism.

CONCLUSION

In this discussion of the future of Canadian psychiatry, I have attempted to indicate a number of worthwhile objectives. The tasks that lie ahead are unquestionably formidable and will test, to the utmost, our capacity for individual and joint effort. As we strive towards our goals we can with advantage keep in mind a recent statement that was made by the President of the Rockefeller Foundation. Dr. Raymond B. Fosdick expressed the conviction that psychiatry "with all its difficulties is perhaps the most significant, as it is the most challenging field in which modern medicine is engaged". I am sure that we heartily agree with Dr. Fosdick and that we all feel privileged to participate in work that is so vital for human welfare.

RÉSUMÉ

L'importance des ravages économiques causés par les maladies mentales au Canada doit suffisamment souligner l'urgence d'améliorer l'enseignement de la psychiâtrie et d'intégrer cette spécialité au rang qu'elle doit occuper dans les divers curricula des écoles de médecine. Nous avons des besoins manifestes et il

s'agit d'établir dès maintenant des plans d'avenir bien précis qu'il faudra mener à bonne fin. Il faudra s'occuper plus particulièrement des psychonévroses, de l'orientation de l'enfance, de la médecine psychosomatique, de l'hygiène mentale industrielle et des psychoses majeures. Nos efforts devront amener, au cours d'un plan décennal, une amélioration de l'enseignement de la psychiâtrie à l'université et une amélioration des cliniques d'hygiène mentale et des asiles. Il faudra encore établir des services de psychiâtrie dans les grands hôpitaux et consacrer du temps,—et de l'argent—à la recherche psychiâtrique. Le Canada a besoin de 500 psychiâtres additionnels et il a besoin d'une complète réorganisation de l'enseignement de cette spécialité. JEAN SAUCIER

CASE REPORTS

RUPTURED TRAUMATIC CARDIAC ANEURYSM IN A CHILD*

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Hæmopericardium aside from actual traumatic penetration by stabbing, gunshot wounds, ends of fractured ribs in crushing injuries of the chest, ruptured cardiac infarcts as a result of coronary thrombosis and ruptured aortic aneurysms is not a common postmortem finding. However, traumatic "bursting" (if one may be permitted to use the word as a probably adequately descriptive one) may occur by extensive direct pressure, probably in an antero-posterior line of force and with the heart in diastole and without the penetrating agency of fractured ribs. One of us (G.S.P.) a few weeks ago performed an autopsy on a case of severe crushing chest injury and found the heart practically torn from all its attachments, only a thin strip of the posterior wall of the aorta remaining and yet on the overlying skin of the chest wall no evidence of abrasion or contusion was apparent.

The case to be presented here appears to be one in which trauma to the myocardium, probably relatively insignificant primarily, eventually proved to be the cause of death. The rarity of this particular pathological process in a child of this age group and the dramatic termination seemed to us of sufficient interest to warrant its recording.

This 10 year old white boy was the victim of an accident on November 17, 1946 when, with four or five other boys he was walking along the road of a neighbouring rural community, a truck swerved to their side of the road, struck him and threw him forcibly to the ground. He was rushed to the Royal Columbian Hospital at New Westminster where he was admitted at 7 p.m. in an unconscious state and suffering from shock. He was pale, restless, his pulse of only fair quality and there was a fairly deep laceration about 1½ to 2 inches long in the left supraorbital region and two puncture wounds in the left upper arm. Prophylactic anti-gas and antitetanic sera were given and wounds cleansed, the supraorbital one being sutured. Restlessness increased and he became nauseated and vomited several times and his abdomen became distended and tender. There was no evidence of any abrasion or contusion of the skin of the anterior chest wall or paresis of the extremities. Urinalysis showed occasional red and white blood cells, a trace of albumin and a very occasional hyaline and granular cast.

November 18.—X-ray of skull and left shoulder girdle revealed no evidence of fracture. Frequent blood pressure estimations during the day showed readings between 74/40 and 100/68, but most of them were below 100 systolic. These low pressures continued till next day when readings as high as 120/68 were obtained. There was some nausea, vomiting and involuntary micturition.

November 20.—Blood pressure at hourly intervals from 10 a.m. ranged from 105/80 to 110/68. Taking fluids well when roused but still is semi-conscious and restless.

November 21.—Very irritable but more alert and complaining of constant generalized headache. Pulse better quality.

November 22.—Considerably improved, more alert, abdomen still distended, pulse better quality. Blood pressure ranged from 90/65 to 108/60.

November 23.—Marked improvement, answers questions readily; blood pressure satisfactory. Cranial nerves checked and no evidence of any lesion found. Abdomen much softer and not tender. From this date until his discharge from hospital on November 28 he made steady progress and final general examination revealed no demonstrable evidence of any residual effects of his accident.

On his discharge his parents were instructed to curtail his activities as much as possible and to postpone his return to school until after the Christmas vacation. These instructions were apparently carefully observed. His participation in games with his fellow students was limited however, owing to a definite lack of "pep" and to dyspnœa on relatively slight exertion. He otherwise carried on a fairly normal existence but was thinner and paler than he had been prior to the accident. He complained of no other disabilities, headaches, etc., other than the above and remained in *status quo* until the morning of January 28, 1947, when he appeared as a witness at the preliminary hearing of the truck-driver. In due course he was called to the witness stand, sworn and asked a few preliminary questions requiring a more or less "yes" and "no" answer, when he suddenly became markedly pale, collapsed and within a matter of minutes, expired. A physician in attendance in the court, also as a witness, administered various stimulants, applied artificial respiration and called an inhalator squad which worked on the lad for about an hour but all to no avail. The defense lawyer was deeply concerned over the tragic conclusion of the trial in that, perchance, the emotional strain incident to the lad's giving evidence may have precipitated and expedited his exodus.

The boy's family history contributed nothing relevant and, except for the usual diseases peculiar to childhood, his past history was negative and no other abnormalities or clinical findings were evident, further than those recorded above.

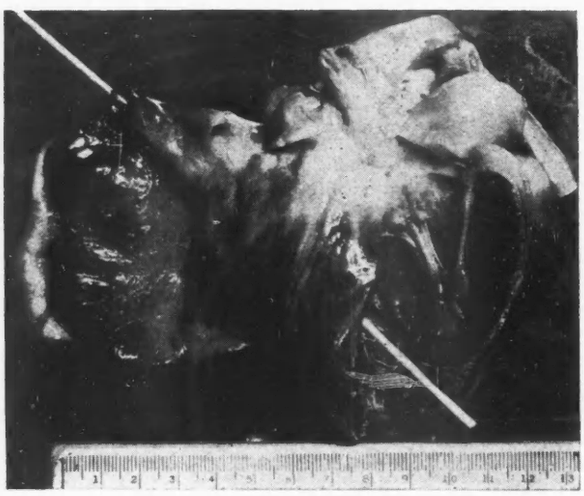
Autopsy examination.—This examination was performed approximately four hours after death and only the essential features will be recorded here.

On opening the thoracic cavity the præcordial space was seen to be markedly enlarged measuring 15 cm. in width, and the contents of the dilated pericardial sac had a deep purplish colour suggesting the presence of

* From the Pathological Laboratories of the Vancouver General Hospital.

blood. On incising it somewhat more than a pint of fluid and clotted blood were found. This markedly compressed the heart which was empty of blood. On removing the blood a saccular projection extending from the antero-lateral aspect of the superior portion of the left ventricle was seen, measuring 8.5 cm. in length by 7 cm. in diameter. Its superior and lateral aspect was adherent to the pericardium by fairly dense fibrous adhesions and in its posterior and superior border there was a ragged perforation about 2 cm. in length. On opening the heart in the usual manner, careful examination of the valves, septa, etc., showed no evidence of any congenital abnormality or inflammatory process but there was a definite communication between the saccular, aneurysmal structure and the left ventricular chamber through a spherical stoma 2 cm. in diameter. There was practically no evidence of mural thrombus formation on the lining aspect of the aneurysm and the wall was extremely thinned out, for the most part on the average of 3 mm. in thickness while at the area of perforation it was almost paper-thin.

No free fluid or blood was present in the pleural cavities and there was no evidence of fractured ribs or that any had been fractured and subsequently healed. However, at the costochondral junctions, in several instances, small deposits of a brownish red pigment were present in the subperiosteal and peri-osseous



Photograph showing posterior aspect of heart with the applicator passing from the left ventricular chamber through the stoma of the aneurysm and thence through the area of rupture.

areolar tissue, which I believed to be old blood pigment, suggesting previous moderate hæmorrhage into these areas. The lungs were not remarkable except for moderate congestion and œdema and the presence of some fairly dense adhesions between the inferior mesial aspect of the left lower lobe and the superior surface of the left diaphragm.

The liver and gastro-intestinal tract were normal. The spleen was somewhat enlarged and was found to be adherent to the inferior aspect of the left diaphragm and a portion of the great omentum at about the junction of its right and mesial thirds where there was a wide, band-like area approximately 1 inch in width, of a greyish-yellow appearance which was thought to be the site of a previous subcapsular laceration which has become organized and adherent as above mentioned.

The kidneys showed a well marked persistence of the fetal lobulations but were otherwise negative except that the upper pole of the left kidney was also adherent by old adhesions to the posterior peritoneum and the left adrenal whose normal structure was definitely altered.

Examination of the cranial cavity was negative.

The following anatomical diagnosis was made: massive hæmopericardium due to rupture of traumatic cardiac aneurysm of left ventricle; old healed subcapsular laceration of spleen; Microscopic examination of the wall of the aneurysm showed a thinned, degenerated myocardium in which there was practically no fibrous tissue replacement and with a minimum of semi-organized mural thrombus formation.

DISCUSSION

It would appear that in this case there had been quite marked compression of the thoracic cage in an antero-posterior direction, which fact would seem to be supported by the finding of the old, extravasated blood about the costo-chondral junctions, the resiliency of the ribs and cartilages of a child of this age period precluding the occurrence of costal fractures. The heart was probably actually "squeezed" between the sternum and vertebral column, the myocardium of the left ventricle bruised or fibres torn and separated but the continuity of the epicardium was maintained. In time the intraventricular pressure gradually distended this weakened area much as a "sand-bruise" on the inner tube of an automobile tire gradually forms a bubble-like swelling on the side of the tube with ultimate rupture. There was very little mural thrombus formation or fibrosis in the aneurysmal wall both macroscopically and microscopically, in fact there was actual degenerative changes in the myocardium about the site of rupture. Further evidence of trauma was the presence of the healed subcapsular laceration of the spleen and probable slight laceration of the left kidney and adrenal suggested by the adhesions between the kidney, adrenal and the posterior peritoneum and the presence of red blood cells in the urine which were not present in subsequent urinalyses.

The actual cause of death was probably not the hæmopericardium *per se* but the additional "tamponnade" of the heart itself by the blood in the pericardial sac.

What rôle the emotional stress of the trial played in this boy's death is problematical. Mere coincidence is equally probable, for the thinned-out wall of the aneurysmal structure could conceivably have ruptured at any moment.

SUMMARY

A case of massive hæmopericardium due to rupture of a traumatic cardiac aneurysm in a boy of 10 years of age is presented.

SEVERE DELAYED REACTION TO PENICILLIN

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Fort Nelson, B.C.

A 26 year old woman, employed as a clerk, was seen 3 days before admission, complaining of intense itching over upper back, arms, chest, abdomen, buttocks, legs and feet. Raised, irregular erythematous patches, ranging in size from 1 to 6 cm. were observed scattered at random over the skin areas mentioned.

Six days before admission she had been given 200,000 units of penicillin in amphojel by mouth (50,000 units in 10 c.c. of saline and 15 c.c. of amphojel every 3 hours) for treatment of a head cold complicated by an early mild left otitis media. Saline solution of penicillin was also instilled into the aural canal twice a day for two days. At that time she complained of skin itching about the ankles. One year previously, she had received intramuscular penicillin for 3 days and sulfadiazine by mouth as treatment for a non-specific vaginal discharge. Two months ago she had received local penicillin for a skin infection of the fingers. She did not recall any skin reaction at either time.

The itching and skin eruption became worse during the three days before admission despite the use of adrenalin, calcium gluconate and intramuscular autogenous blood. Benadryl 50 mgm. was given twice the day before admission with no effect. On the day of admission, the reaction had progressed to frank œdema. There was puffiness about the eyes, cheeks and lips. The scalp presented several firm, raised itching areas. The patient complained of soreness of the buccal mucosa and a distressing cough. Auscultation of the chest revealed a few scattered râles. A flat chest plate was negative. Heart examination was negative. The blood pressure was 106/60. Pitting œdema was present about the ankles and feet. The temperature was 100.2 pulse 100 and respirations 18. There were 8,900 leucocytes and 4,720,000 erythrocytes per c.mm. and the sedimentation rate was 72 mm. per hour. The urine was scanty, dark amber in colour with a specific gravity of 1.029. Tests for albumen and sugar were negative.

The day after admission, the main complaint was severe pain in the muscles of the abdomen, back and extremities. The œdema decreased rapidly with the administration of benadryl 50 mgm. four times per day.

On the second hospital day, the patient complained bitterly of chest pain, described as beginning substernally and "going through" to the back. On the evening of the same day sudden intense pain began in the right thigh, posterior neck and upper back. The muscles in these areas were in spasm and quite tender. Morphine gr. 1/6 was fairly effective in producing relief.

The patient's general condition improved daily and she was discharged on the sixth hospital day, still complaining of some itching and muscular pains which did not completely disappear for three weeks.

Four days after discharge, the patient was seen in consultation with Dr. Harold Orr of Edmonton, who concluded that a sensitivity to penicillin was induced by the two previous contacts referred to above. Several days after her last exposure, a severe reaction developed which progressed to angioneurotic œdema.

The unusual elements of this picture are the considerable latent period between cessation of penicillin therapy and the appearance of the reaction and the severity and duration of the disturbance. Reports of severe reactions are appearing with increasing frequency. Scheiberg[1] reports a case of angioneurotic œdema after penicillin given by nebulization, which responded dramatically to benadryl medication. The reaction occurred only after 1,000,000 units had been given, indicating the need for the patient to become progressively sensitized before symptoms appear.

Dressler and Dwork[2] report a case presenting severe muscular pain similar to the case under discussion. Morginson[3] states that penicillin usually exerts its effects as an antigen and allergen. He points out that the principal shock tissue appears to be the vascular system. This contention would support the appearance of œdema in many cases of reaction. It is possible that the delay in reaction in this case may be due, as Morginson states, to a lowering of allergic resistance. This may not have occurred for several days after therapy.

Severe reactions to penicillin such as this are danger signs emphasizing the present trend away from indiscriminate and incautious use of penicillin. The possibility of pharyngeal œdema with its serious portent was indicated here by the presence of buccal soreness.

SUMMARY

A case of angioneurotic œdema onsetting 6 days after the cessation of penicillin therapy is presented in which the patient had been sensitized by penicillin on two previous occasions. Benadryl was the only medication of several tried which gave relief. Symptoms were still present to a small degree 4 weeks after their first appearance. The reaction was clearly an allergic one and of sufficient severity to warrant support to the exercise of caution in the use of the drug, particularly in persons with a history of allergy or possible sensitization.

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AN UNUSUAL OBSTETRICAL EXPERIENCE

George M. White, M.D., M.R.C.O.G., F.R.C.S.[C.]

Saint John, N.B.

This case is presented because of an unusual obstetrical difficulty.

Mrs. H.H., 45 years of age was admitted to my service on September 27, 1945, as an emergency. She was pregnant for the sixteenth time, having fifteen

living children at home; she had had one miscarriage, but later had twins and so evened the count. Her first labour had been instrumental, at home, but several times she had delivered without any doctor being present, as she lived in the country. Several of her latter babies were born in hospital, and were known to be very large. There were records of the last three weighing 13 lb. 6 oz.; 12 lb. 8 oz.; and 13 lb. 12 oz. respectively.

On admission she was toxic, with a blood pressure of 210/112, albumen 250 mgm. per 100 c.c., marked œdema of the face, abdomen, feet and legs. She was irrational.

She was treated expectantly for two days with little improvement in the blood pressure or the albumen, but with marked improvement in the œdema and the mental symptoms.

She weighed 285 lb. and abdominal diagnosis was well nigh impossible, so her abdomen and pelvis were x-rayed. This report showed a gynecoid pelvis with large measurements, it also showed a large fetus, not engaged, and the head, presenting, was extended.

On September 29 the patient went into labour, after being given a medical induction. She became very restless and noisy with her sedatives, and at 1.30 p.m. September 30 she was given a gas anæsthetic and examined.

The outlet, mid pelvis and inlet were all found to be large, the membranes were intact and bulging through the fully dilated cervix; the head was floating. The membranes were ruptured, and after considerable fluid escaped, the head was found to be in extension. A careful attempt to bring the head into the pelvis with forceps showed that this could not be done without grave danger to both the mother and baby. A version was done and the legs were extracted to the knees; these feet and legs were very large. Further progress was impossible, and I believed that I had an extended arm that was blocking the pelvis. Examination at this stage demonstrated the fact that the baby's hips and pelvis were larger than the inlet of the mother's pelvis.

The feet and legs were wiped off with sulfathiazole emulsion and replaced in the vagina, and the vulva was covered with pads soaked in the same. The abdomen was opened and a Porro Cæsarean was done. A male child, weighing exactly 15 lb. was delivered in good condition. The abdomen was closed without drainage. Following operation the patient was given several blood transfusions, and about one million units of penicillin.

Her recovery was afebrile, and uneventful, her toxæmia gradually improved, and she was discharged on the 17th day, with blood pressure 140/80 and no albumen in the urine.

The baby was 23¾ inches long at birth, and weighed 15 lb. He ran a fever between 100 and 101° for several days, then gradually became normal, and never went below birth weight, weighing on discharge 15 lb. 10 oz.

I believe that several lessons can be learned from this experience.

1. That multiparity without previous difficulties is a good insurance but certainly not a guarantee against difficulties and complications.

2. That while the x-ray gives a fairly accurate reading on the size of the maternal pelvis, if the baby's head is not engaged, it does not give an accurate reading of the head.

3. That one can have a very large baby in the presence of a rather severe toxæmia.

4. That this is an all-time record baby, in size, for me.

CANADIAN MEDICAL WAR SERVICES

MEDICAL OFFICERS STRUCK OFF STRENGTH OF THE R.C.A.M.C.—ACTIVE FORCE

APRIL AND MAY, 1947

(Previous sections in January, March, April, May, June, July, September, October, November and December, 1945 and January, March, May, June, July, August, September, October, November and December, 1946 and January, February, March, May, June, 1947.)

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Barclay, G. R.,	St. Vincent Township, Ont.	31-3-47
Bean, S. J. T.,	216 Wharncliffe Rd. N., London, Ont.	30-3-47
Boretsky, P.,	5376 Hutchison St., Outremont, Que.	31-3-47
Borthwick-Leslie, K. V.,	416 Medical Arts Bldg., Winnipeg	2-12-46
Bowen, F. H.,	2039 Richmond St., Windsor, Ont.	30-3-47
Boyd, S. A.,	790 Minto St., Winnipeg	19-3-47
Boyden, R. W.,	133 Lawrence Ave. E., Toronto	22-3-47
Brownridge, T. R.,	10130 116th St., Edmonton	15-4-47
Burnes, J. S. D.,	146 East 11th St., North Vancouver	31-3-47
Campbell, D.,	188 Prince St., Charlottetown	10-10-45
Chute, A. L.,	555 Russell Hill Rd., Toronto	30-9-45
Daymond, R. S.,	Viscount, Sask.	19-10-45
Dorval, C. H.,	410-4th Ave., Quebec	28-3-47
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Evans, A. M.,	3775 Pender St. E., Vancouver	8-11-45
Feinstein, M. S.,	72 Harrow St., Winnipeg	12-6-46
Fox, C.,	604 W. 191st St., New York City	16-10-46
Giard, T.,	St. Antoine, Que.	11-3-46
Giardine, F. P.,	87 Robinson St., Toronto	16-10-46
Goldstein, B.,	161 Euclid Ave., Toronto	31-3-47
Graham, C.,	436 Gilmour St., Ottawa	3-4-47
Greenwood, F. C.,	25 Church St. E., St. Catharines, Ont.	31-3-47
Hay, M. C.,	Foxwarren, Man.	28-8-46
Hebert, L.,	6006 Iberville St., Montreal	15-4-47
Hetu, J. J. E.,	Montreal	31-3-47
Hewett, C. D.,	580 Gilmour St., Peterboro, Ont.	20-1-47
Howie, V. S.,	3660 Lorne Crescent, Montreal	22-10-46
Jenkins, J. S.,	Charlottetown	31-3-47
Kinsman, G. W.,	831 6th Ave., Saskatoon	5-3-47
Lobb, R. A.,	Beatty, Sask.	31-3-47
McCracken, W. J.		31-3-47
Macdonald, G. F.,	Court St., Antigonish, N.S.	10-3-47
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Mackay, J. P.,	61 Snowdon Ave., Toronto	26-4-47
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Matas, J. I.,	121 Euclid Ave., Winnipeg	29-11-46
Mills, F. H. G.,	185 Maplewood Ave., Winnipeg	22-3-47
Moon, I. D.,	169 Glenrose Ave., Toronto	22-10-46
Nash, S. S.,	93 Clinton St., Toronto	21-10-46
Ritchie, R. C.,	60 Chatsworth Drive, Toronto	19-10-46
Rogers, R. T.,	196 King St., Brockville, Ont.	11-3-47
Rosenbaum, P.,	240 Augusta Ave., Toronto	30-3-47
Scott, D. M.,	Almonte, Ont.	17-1-47
Sheps, J. G.,	138 Machray Ave., Winnipeg	6-12-46
Sutherland, J. L.,	Milton, Ont.	24-2-47
Tauber, A. S.,	692 Pierre Ave., Windsor, Ont.	17-3-47
Taylor, C. H.,	157 Ethelbert St., Winnipeg	29-3-47
Therien, R. J. B.,	1240 St. Joseph, Apt. 5, Montreal	31-3-47
Thompson, C. S.,	525 Dominion St., Montreal	15-5-47
Thompson, J. S.,	77 Breadalbane St., Toronto	17-10-46
Turnbull, A.,	144 Goodwin St., Victoria	9-8-45
Van Vliet, W. B.,	282 St. George St., Toronto	31-3-47
Weekes, W. E.,	Exeter, Ont.	28-4-47
Weil, P. G.,	3638 Lorne Crescent, Montreal	31-3-47
Weinbaum, E. S.,	146 Chiltern Rd., Toronto	19-3-47
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THE CANADIAN MEDICAL ASSOCIATION

Editorial Offices—3640 University Street, Montreal

(Information regarding contributions and advertising will be found on the second page following the reading material.)

EDITORIAL

THE CENTENNIAL OF THE AMERICAN MEDICAL ASSOCIATION

THE hundredth birthday of the American Medical Association has been duly and appropriately celebrated. The representatives of our own Association bore our formal greetings and best wishes, and we would like to add our tribute of praise and congratulation on the occasion. The history of the growth of the American Medical Association is an absorbing spectacle, presenting all the many aspects and developments of the American people as a whole; but the main element from the point of view of medicine is that of pride in the ideals which have been kept steadily before the profession, and in the achievements of service to the people that have been encompassed.

If the past is of interest, how much more so is the future, with all its promise—and all its uncertainty! The fulfillment of the promise and the overcoming of the uncertainty will always call for the courage and wisdom which have brought the American Medical Association to its present high estate. Our own Association once more extends its warmest felicitations and best wishes.

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THE WINNIPEG MEETING

IF one reviews past meetings it is apparent that there is generally some special development or tendency in each case. For example, during the war two points were in particular prominence; (*a*) military medicine, and (*b*) the study of health insurance so called. The first has lost the urgency of its aspect, the second will probably increase in urgency. What is to be taken out of the Winnipeg meeting as of peculiar significance? The immediate repercussions of the war are lessening, although an appreciable proportion of our profession is still in military service and a further number are associated with D.V.A. activities.

Medical economics is thrusting forward again and at this meeting it became crystallized in the form of special conferences on voluntary prepaid medical services. It was necessary to explore the part which could be played by these services in the problem of lightening the costs of medical care, and their limitations and the advantages were thoroughly discussed.

Another point of special interest was in regard to income tax deductions for medical men. Efforts to adjust these deductions so that they be treated as rightful and necessary expenses in maintaining medical standards are constantly being made. Progress is slow, but a certain very moderate concession from the Minister of Finance has been secured. Further adjustments are being urged.

One difficulty which is recurrent and is becoming more acute is that of housing our members at the annual meeting. The first serious instance of this was at Banff last year, when the demand for space far exceeded the supply, and only the heroic efforts of the housing committee saved the situation. This year the same shortage of space was apparent, and again the housing committee showed the highest devotion to their duties. But it is quite apparent that our members are now too numerous to be accommodated in even reasonable proportions at any meeting point except those with large hotels. The holding of meetings in every Province in turn is of so great value in strengthening the bonds of our Association, that every effort will be made to carry on that tradition. But our members must realize the physical difficulties which have developed.

The Winnipeg meeting is now a matter of history, and it has left the most pleasant memories of a warm and freely dispensed hospitality.

EDITORIAL COMMENTS

Margarine

The annual effort in Parliament to permit of the sale of margarine in Canada has met with its annual defeat. The political aspect of the question need not be dwelt on here, beyond expressing the hope that persistence in the advocacy of its use may have its reward. In the meanwhile the dietary or nutritive value of margarine cannot be made too clear.

Margarine is a substitute for butter. It is made from vegetable fats and oils of seeds, such as cottonseed, cocoanut and soybean. Animal fats may be added as well, but not necessarily. The oily fats are hardened chemically to convert them into solid fats of the consistency of butter. Colour may be added as needed. One criticism of margarine has been that vegetable oils may be lacking certain acids essential to nutrition which are found in butter fat, such as linoleic acid. As a matter of fact some of the vegetable oils which may be used for margarine are richer in these essential acids than is butter. Again, the mixture of vegetable oils and animal fats in margarine would fully make up any such deficiencies.

One factor absent in vegetable oils is vitamin A, and if the lack of this could not be remedied it would seriously weaken the value of margarine. But it is quite easy to add as much vitamin A as is needed, and so make margarine contain more of this vitamin than the richest butter. Even butter is liable to show seasonal variations in its content of vitamin A. Other vitamins too could be added to margarine such as vitamin D, for instance, of which butter contains very little. As a source of energy margarine and butter are exactly equal.

Perhaps one of the main difficulties encountered with margarine in the early days of its development was that of its taste. That has now been so completely overcome that it is difficult to distinguish between butter and margarine. Even if it was making a virtue of wartime necessity Britain found no difficulty in learning to like as well as depend on margarine during the war period.

A typical margarine today, as made in the United States, consists of 80% refined vegetable oils, together with 16.5% pasteurized non-fat milk for flavour, plus small amounts of glycerin derivative to prevent spattering in frying, vegetable lecithin to prevent burning and sticking to the pan, sometimes benzoate of soda as a preservative, salt and vitamin A concentrate up to a minimum of 9,000 U.S.P. units per pound; some brands go as high as 15,000 units per pound.

From the economic and nutritional aspects good margarine is superior to butter.

When we take an x-ray film we are filled with wonder at the complications of nodes and shadows, not sufficiently realizing that what we are gazing at is the picture of past battles, filled-in trenches, exploding mine-craters and the like. What we imagine we see, but do not, is the advancing army of disease.—*Papers of a Pioneer*, Sir Pendrill Varrier-Jones.

MEDICAL SOCIETIES

The Medical Library Association

The Medical Library Association held its forty-sixth annual meeting in Cleveland, Ohio, in May. Miss Edna M. Poole, Librarian, Academy of Medicine, Toronto, was elected secretary. Other Canadian librarians attending were: Miss M. D. Morton, Department of National Health and Welfare, Ottawa; Miss Edith Gordon, McGill University Medical Library, Montreal; Miss Edith Sullivan and Miss Elsie Sumner, University of Western Ontario Faculty of Medicine Library, London; Miss Ruth Briggs, Connaught Laboratory and School of Hygiene Library, and Mrs. M. Cornell, Banting and Best Research Library, Toronto. One member came from Honolulu and thirty-three States of the Union were represented. The Association is international and includes members from Europe, China, England, Canada, and the United States.

One session of the meeting was devoted to a synopsis on visual aids and the medical library with papers by Mr. Tom Jones, Professor of Medical and Dental Illustration, University of Illinois; Dr. Bruno Gebbard, Director, Cleveland Health Museum; Dr. Howard Dittrick, Director, Dittrick Museum of Historical and Cultural Medicine, Cleveland; Mr. Ralph P. Creer, Secretary of the Committee on Medical Motion Pictures of the American Medical Association; Mr. Seymour Robb, Librarian, Columbia University College of Physicians and Surgeons.

Mr. Robert M. Stecker gave a paper entitled "Light Comments on Library Illumination," a subject of special interest to librarians whose libraries are usually so poorly lighted.

The question of special training for medical librarians was discssed. The Committee recommended that, after students graduate from library school, they spend a period of service in a medical library with another six months' lectures in medical library work. This course is to be arranged in three centres located in the eastern States, the midwest, and the western States.

LILLIAN A. CHASE

MISCELLANY

I'M FOR THE ENTENTE CORDIALE

A. D. Kelly, M.D.

Toronto, Ont.

[*It is a little late to be referring to a meeting which was held in April—and in a snowstorm—but it is never too late to discover Quebec, as Dr. Kelly does in the following account. He is realizing, what everyone should be able to do, that Canada is a country not a series of fragments. One part of it may seem different, but after all, precious stones have their varying facets.*—EDITOR]

I have recently had a most salutary experience, and in the promotion of true Canadian citizenship, I could wish for nothing better than that a large number of my Ontario colleagues could have shared it. In the course of my duties with the Canadian Medical Association, I received an invitation to attend the Annual Meeting of the Quebec Division, and as I had never previously attended a medical meeting in that province, I accepted promptly. To be quite accurate, I have attended meetings in Montreal, but they were large meetings, and my contacts were mainly with fellow-visitors and members of the "McGill crowd" who are the stalwarts of our profession. This meeting was held in Quebec City, and as the last time I visited there was on my honeymoon, my knowledge of the town and my acquaintance with the people was strictly limited.

Like most residents of Ontario, I am equipped with the usual quota of prejudices, and my approach to this meeting was probably tinged with some of that lovely air of superiority which does not endear us Torontonians to the rest of us Canadians. At any rate, I got my eyes opened. To begin with, the weather was frightful. Instead of the lovely Spring day which the committee in charge had ordered, the meteorological department sent about six inches of slushy snow, but in spite of this handicap, a goodly audience assembled for the first scientific session at the Hôpital du Saint-Sacrement. Eight scientific papers and case demonstrations were presented by the members of the staff, four of them in English and four in French. Maybe I have been away from practice of medicine too long to have retained my clinical judgment, but I thought that the quality of these papers would be duplicated at meetings in Halifax or Toronto or Windsor or Saskatoon or Vancouver.

The afternoon session was held in the lecture amphitheatre of the Faculty of Medicine at Laval University. We do not run across many Laval graduates up this way, and so the standing of this school is difficult for us to assess. The buildings are very old, and are located right in the centre of that hilly city of narrow, tortuous streets. However, buildings do not constitute a University, and one gained the impression from contacts with such men as Dr. Charles Vézina, the Dean, and Dr. Louis Berger, the Professor of Pathology, that this school is progressive in its outlook, and that it is doing its job in training good doctors. These buildings will shortly be of interest only to the antiquarian because they have plans and designs for a new medical school away out on the Grande Allée. If Laval construction follows the pattern established at the University of Montreal, the Province of Quebec will have the most up-to-date facilities for the teaching of medicine to be found in Canada.

The business session of the meeting followed immediately after the second scientific session. The report of the Executive and the reports of the standing committees indicated that our colleagues in Quebec are interested in the same general problems which concern the profession everywhere else, but they appear to be less argumentative than their counterparts west of the Ottawa River. Medical Economics, that difficult, contentious and important topic which has engaged our attention for years, was conspicuous by its absence in these discussions, and I could not determine whether they have solved the problem or whether they are tired of talking about it. I was very much interested to learn that the membership in the Quebec Division of the Canadian Medical Association has increased from 384 members in 1938 to its present figure of 1,350. This does not suggest that our French-speaking colleagues are holding aloof from the voluntary bodies of organized medicine in Canada, but that they are in ever increasing numbers uniting with the rest to promote a common outlook.

A very spirited debate took place on a resolution endorsing the compulsory pasteurization of milk. It is amazing how heated discussion appears to be when it is conducted in an unfamiliar language. This one took place in French, and I gathered the impression that the speakers were opposing the principle of pasteurization, but it turned out that they were unanimously in favour, and all of the impassioned speeches related to methods of obtaining some action on this matter by presenting the views of the Division to provincial and municipal health authorities.

The bilingual facility of the members of the Quebec Division was a constant source of admiration to me. The representatives from Montreal and the Eastern Townships presented their reports in French. The normally French-speaking members switched from one language to the other with the greatest of ease, and their courtesy was manifest in their efforts to make the proceedings intelligible to all. Stimulated by this display of bilingualism, I concluded some remarks I had to make by quoting a completely irrelevant French couplet which I recalled from high school days, and our very tolerant French-speaking colleagues were good enough to laugh with me at my Ontario accent. It is evident to me that if we made the same efforts that have been made by the majority of Quebec doctors to converse in the other official language, we would be better physicians and better Canadians.

They say that the cocktail parties of Mayfair have been more effective weapons of British diplomacy than the official sessions around the conference table. Our hosts in the City of Quebec must be acquitted of any desire to unduly influence their visitors, but their hospitality and evident familiarity with social usages, certainly created a most favourable impression upon this one. The highlight was a magnificent dinner, without speeches, held at the Cercle Universitaire, at which the President, Dr. C.-A. Gauthier and Madame Gauthier entertained. This was a dinner which requires a knowledge of culinary French to describe adequately. The luncheons at the Garrison Club and the Veterans' Hospital were also fine examples of Quebec hospitality and good fellowship.

The final scientific session of the meeting was held at the local D.V.A. Hospital, or, as it is more picturesquely termed, L'Hôpital des Anciens Combattants. I was particularly impressed with the keenness and enthusiasm of the medical staff who provided a series of interesting papers which evoked lively discussions. These men had all served in the Forces, they spoke English well, and it was evident that their circle of acquaintance extended far beyond the boundaries of their native province. I had requests to pass on regards to many friends in Ontario and the West. Old so-and-so had been with No. 14 General; where did Bill finally locate, he was with me in Six Group; haven't seen George since we wrote our Fellowship together, and many similar messages indicating that one of the few compensations of war was operating effectively.

Looking back on it, this was just another provincial medical meeting. Dr. Wallace Wilson, the President, and Mrs. Wilson attended as they have all other Divisional meetings held during their term of office. They did not find it impossible to come all the way from Vancouver to lend their support to this meeting, and their presence was in itself a good indication of the essential unity of the Canadian medical profession. At the meeting of the Quebec Division, the locale was different, and the language was unfamiliar in spots, but what I am endeavouring to convey is that basically the same principles, aims and objectives actuate the doctors of Quebec as apply to the profession in Ontario or Alberta. We have far more points in common than we have differences, and it behooves us to accentuate the positive in the interests of a strong, united Canada.

The Tubercle Bacillus Joins Up!

Streptomycin, latest of the so-called "wonder drugs", is effective against two deadly types of tuberculosis, Dr. Paul Bunn of Washington, D.C., reported at a meeting of the American College of Chest Physicians.

Bunn said 600 patients had been treated in the Veterans Administration Hospital within the last year, and while no case was classified as "cured" it was found that streptomycin had good effect against military tuberculosis and tuberculous meningitis.

Military tuberculosis is one of the worst forms of the disease. It is the type that sweeps all over the body, causing death usually within a short time.

Dr. Bunn said there were 80 cases of military tuberculosis and tuberculosis meningitis in the 600 cases studied.—From *The Montreal Star*, June 9, 1947.

SPECIAL CORRESPONDENCE

The London Letter

(From our own correspondent)

The National Health Service

The hitherto rather shadowy outline of the National Health Service Act is gradually becoming more defined. The Prime Minister has just announced that the coming into force of the Act has been postponed for three months—from April 1 to July 5, 1948. For this extra breathing space all concerned are duly thankful, and there are still many who consider that the success of the scheme would be more ensured were the general practitioner part to be postponed until the hospital and consultant sections have been shown to be working satisfactorily.

A strong committee has been set up by the Minister of Health to recommend a scale of remuneration for consultants. This new committee is to be under the skilled chairmanship of Sir Will Spens who was chairman of the committee which reported upon the remuneration of general practitioners. Draft regulations have also been published for a superannuation scheme for staff in the new service, including doctors. It is to be a contributory scheme, and employees' contributions will be 6% of remuneration. In the case of practitioners who will not occupy salaried posts the basis of allowances will be 1½% of remuneration.

Finally, and most important of all, the Minister has announced the members of the new regional hospital boards. There are fourteen such boards and their function is to act as the agents of the Minister for organizing the hospital and specialist services in their area. In his choice of chairmen and members the Minister has thrown his net wide, and clearly his criteria for membership in the vast majority of cases has been long and practical experience of some aspect of hospital and medical service.

Meanwhile the Negotiating Committee, set up by the British Medical Association, is pushing ahead with its work, and it is hoped that the report of the committee will soon be ready for presentation to the profession. According to the Minister himself, these discussions are proceeding with a "diminuendo of acrimony".

The King's Birthday Honour List

The medical profession is particularly well represented in the honours lists that were issued last month. Amongst the well known members of the profession who have been honoured are Sir Hugh Lett, Bt., the President of the British Medical Association, who is appointed K.C.V.O. Knighthoods have been conferred upon Dr. Norwood East, the distinguished prison psychiatrist; Professor D. K. Henderson, the occupant of the oldest chair of psychiatry in the country—that in the University of Edinburgh; Professor E. L. Kennaway, who has just retired from the post of director of the Chester Beatty Research Institute of the Royal Cancer Hospital; Mr. A. H. McIndoe, whose work as Consultant Plastic Surgeon to the Royal Air Force is so well known; and Dr. R. A. Young, the doyen of the Brompton Hospital. Other names in the list include those of Dr. G. L. Brown of the scientific staff of the Medical Research Council, and Professor J. A. Gunn of Oxford, the chairman of the *British Pharmacopoiea*, who have been appointed C.B.E., and Dr. Howard Jones, the director of the medical department of the British Council, who has been appointed O.B.E.

International Conference of Physicians

The preliminary program has now been announced of the International Conference of Physicians, organized by the Royal College of Physicians, which is to be held in London from September 8 to 13 of this year, under the presidency of Lord Moran. The conference is to meet in eight sections, and the high standing of the presidents of these sections augurs well for the success of the conference: Cardiology, Sir Maurice Cassidy; Disorders of the Chest, Sir Robert Young; Dermatology, Sir Archibald Gray; Neurology, Dr. Gordon Holmes; Pædiatrics, Sir Leonard Parsons; Psychiatry, Dr. Bernard Hart; Social Medicine, Sir Wilson Jameson; General Medicine, Lord Moran. The Scandinavian countries are particularly well represented among the foreign speakers whose names have so far been announced—providing thirteen out of the thirty speakers from abroad. Most of these are from Europe, and among the other countries represented are Belgium, Czechoslovakia, France, Holland and Switzerland. This, and the International Surgical Congress which is to be held about the same time, are the first large international medical congresses to be held in this country since the end of hostilities. Whilst it will not be possible, under present austerity conditions, to emulate the lavish hospitality of pre-war conferences, it is the hope of the organizers that these meetings will provide an opportunity for bringing together the doctors of the continent who have for so long been shut off from each other.

Certificates Again

Reference has already been made in this correspondence to the steadily increasing number of certificates which doctors are being called upon to sign on behalf of their patients. In reply to a question in the House of Commons recently the Minister of Health gave a list of the enactments and purposes for which such certificates are required by Government departments. This list, which "is not necessarily exhaustive", includes sixteen items. Some of the more interesting items in this list are the following: in support of a claim to leave or change employment; in support of a permit to be employed at sub-standard wages; to obtain additional supplies of fuel and exemption from heating restrictions; to assist in obtaining surgical corsets; to obtain special treatment with regard to goods which are the subject of Governmental control; to assist claimants for additional petrol allowances on medical grounds. It is not surprising that some general practitioners are beginning to wonder whether a secretarial college is not a more appropriate mode of entry to the medical profession than a school of medicine.

WILLIAM A. R. THOMSON

London, July 1947.

ABSTRACTS FROM CURRENT LITERATURE

Medicine

Mercurial Diuretics. Chapman, D. W. and Shaffer, C. F.: *Arch. Int. Med.*, **79**: 449, 1947.

Two immediate reactions, a non-fatal hypersensitivity and a fatal cardiac reaction to the mercurial diuretics have been noted. Death is usually caused by ventricular fibrillation. Ascorbic acid is brought forward as possibly capable of having a detoxifying effect on these powerful agents, mercurophylline, mersalyl and neophylline and mercurohydrin. To be really useful it should increase the diuretic effect, should be innocuous and should mix without forming a precipitate.

Mercurohydrin was found the least toxic, and its action more affected by ascorbic acid. Also the mechanism of death from mercurohydrin was not ventricular fibrillation but ventricular asystole. It was found that when ascorbic acid was given along with the mercurohydrin instead of before and after, it had more diuretic effect and more detoxifying power. Thus mercurohydrin seems to be the choice of mercurial diuretics and the addition of ascorbic acid a very great advance in treatment. P. M. MACDONNELL

Indications for Irradiation of the Pituitary Gland in Patients with Arterial Hypertension. Pendergrass, E. P., Griffith, J. Q., Padis, N. and Barden, R. P.: *Am. J. M. Sc.*, **213:** 2, 1947.

These authors present their findings and conclusions in a study of 93 patients suffering from arterial hypertension who were treated by irradiation of the pituitary gland. The follow-up period ranged from 3 to 56 months, averaging 16 months. Preliminary investigation included bioassays for antidiuretic hormone in serum; x-rays of the pituitary fossa; bioassay for gonadotropic hormone; measurement of cutaneous lymphatic flow; measurement of cutaneous reactivity using the capillary microscope. An increase in the antidiuretic hormone was used as a requisite in the selection of cases.

Following irradiation of the pituitary gland about half the cases showed significant lowering of blood pressure and appreciable clinical improvement. The most common finding in the cases which did not improve was failure of the antidiuretic hormone to fall following irradiation. Patients with original renal failure or elevated gonadotropic hormone did badly. The capillary reactions and the changes in cutaneous lymphatic flow were apparently without determining effect. The factor of pituitary fossa size did not influence the results.

A complication of treatment was the development in three of the five patients originally presenting papillœdema of severe headache, delirium, coma and convulsions after irradiation. All recovered and treatment was cautiously recommenced. In the authors' opinion the final failures of treatment could be reduced to 16% by restricting the cases to those patients with a positive bioassay for antidiuretic hormone, normal serum gonadotropic hormone and normal renal function. Papillœdema they did not consider to be a contraindication of treatment with irradiation provided the patient can be hospitalized, but did not consider that the final results justify its routine use in this group.

There was no evidence of hypopituitarism noted in any of the patients treated, some of whom were followed for 4½ years. Electro-encephalographic studies were carried out on twelve patients following therapy and brain damage was not demonstrated.

G. A. COPPING

Oral Administration of Penicillin. Ross, S., Burke, F. G. and Olansky, S.: *New England J. Med.*, **236:** 817, 1947.

Penicillin was administered orally to 150 patients. Of 96 cases of gonorrhœa 85 were cured, all but one of the failures being among females, the average dosage being 300,000 units (50,000 units every three hours). Of two cases of subacute bacterial endocarditis treated with 100,000 units every three hours one was cured and the other considered a failure at the end of a month of treatment. In 17 cases of pneumonia (14 due to pneumococcal and 3 to hæmolytic streptococcal infection) all were cured by oral penicillin (50,000 units every three hours in all but two cases where the dose was 100,000 units). One case complicated by empyema was successfully handled by the addition of three daily injections into the pleural cavity of 40,000 units.

Results in the treatment of syphilis with oral penicillin were interesting but rather inconclusive. In three early cases dosage of 50,000 units every four hours for twelve days brought about a serologic cure in two. Ten patients given 100,000 units because of a dark-field positive lesion showed negative dark-fields after eighteen hours. If early syphilis is to be treated with oral penicillin it is probable that the total dose should be 5,000,000 to 10,000,000 units. Results in 23 cases of cellulitis paralleled those obtained with parenteral penicillin although three to four times the amount was given by mouth. Five cases of infantile impetigo and four cases of acute pharyngotonsillitis responded well to oral penicillin.

Study of blood levels and therapeutic results demonstrated that plain calcium penicillin was as effective as penicillin combined with buffering agents. No such buffering agent was employed in 130 of the above 150 cases.

NORMAN S. SKINNER

Treatment of Chronic Osteomyelitis with Streptomycin. Lamphier, T. A. and Cashman, C.: *New England J. Med.*, **236:** 318, 1947.

Contamination of wounds with Gram-negative organisms often inhibits penicillin action because of the production of penicillinase. The majority of Gram-negative organisms in the wounds of patients with osteomyelitis are secondary contaminants (mainly pseudomonas aeruginosa, proteus vulgaris and aerobacter aerogenes) but their presence markedly prolongs wound healing. Cases of chronic osteomyelitis, which have failed to heal with thorough surgical intervention and penicillin administration will respond to the use of streptomycin if the organisms are sensitive to the latter drug.

Four excellent results are reported in detail. Streptomycin should be employed both locally and intramuscularly. Locally, the daily dosage advocated is 150,000 units in gelfoam or fibrin foam. Parenterally, dosage should run as high as 500,000 units intramuscularly every three hours, depending upon the degree of infection. The authors found the addition of procaine to the intramuscular injections a helpful means of alleviating pain at the site of injection.

Pseudomonas aeruginosa is highly resistant to streptomycin but is easily eradicated by the local substitution of a 1% acetic acid solution for a 24-hour period. The wound should be subsequently thoroughly washed with saline as streptomycin is inactive in an acid medium.

NORMAN S. SKINNER

Sensitivity to Pork-Liver Extract in Pernicious Anæmia. Bauer, J. L., Watson, R. J., Chambliss, J. R. and Davidson, C. S.: *New England J. Med.*, **236:** 622, 1947.

Fourteen of 200 cases of pernicious anæmia being treated with pork-liver extract developed a sensitivity which was manifested in one of three ways. The most common reaction consisted of generalized itching, urticaria, œdema of the face and lips, nausea and vomiting. The second type exhibited peripheral vascular collapse, including thready pulse, sweating, cyanosis, weakness and fainting. A third group developed swelling, itching and induration without necrosis at site of injection. In all cases the immediate symptoms were relieved, at least in part, by the injection of adrenalin.

In the 14 sensitive patients a liver extract derived from beef was employed. Three patients became sensitive to this, two were successfully desensitized by dropping the dosage to small levels and increasing it at frequent intervals and the third patient, who was apprehensive of such treatment, was given pork-liver extract by mouth.

Skin testing was rather inconclusive but in general indicated a greater sensitivity to extract of pork-liver. Muscle-extracts of beef and pork gave uniformly negative skin reactions.

The authors conclude that sensitivity to liver extract represents an acquired sensitization to an animal species and not a sensitivity to liver tissue.

NORMAN S. SKINNER

Streptomycin Treatment of Pulmonary Infections. Harris, H. W., Murray, R., Paine, T. F. and Finland, M.: *New England J. Med.*, **236:** 611, 1947.

Pulmonary infections with Gram-negative bacilli are less frequent but more severe than those caused by Gram-positive organisms and the use of streptomycin is often advisable. Infecting organisms may rapidly develop resistance to streptomycin and this is a common cause of failure of this type of therapy. Inhalation of streptomycin is valuable in cases of abscesses or large bron-

chiectatic cavities but systemic therapy should probably be employed at the same time. Six cases are reported in detail. An interesting feature of one was the prompt cure of an associated chronic suppurative otitis media.

NORMAN S. SKINNER

The Metabolic Effects of Steroid Hormones in Osteoporosis. Reifenstein, E. C. and Albright, F.: *J. Clin. Invest.*, **26:** 24, 1947.

The authors define osteoporosis as that defect of the skeleton in which the primary disturbance is lack of bone matrix formation. Osteoporosis, so defined, is to be distinguished clearly from osteomalacia and osteitis fibrosa generalisata (cystica). In the former, the primary disturbance is failure of mineralization of the bone; in the latter, increased bone destruction. Osteoporosis may be associated with the postmenopausal state, prolonged immobilization of the patient in bed, old age, malnutrition, acromegaly, Cushing's syndrome, and the adaptation syndrome of Selye. In some instances the cause of the condition cannot be found. The present paper gives the results of extensive and detailed metabolic studies on the effect of several steroid hormones or hormone-like substances on the following group of patients: 5 patients with post menopausal osteoporosis; 3 patients with Cushing's syndrome; 2 patients with an acute osteoporotic process which followed orthopædic operations; and 1 male patient with senile osteoporosis. Œstradiol benzoate, diethylstilbœstrol, progesterone, testosterone propionate, and methyltestosterone were the steroids employed. In the groups studied both androgens and œstrogens caused a retention of calcium, phosphorus, and nitrogen. The androgens were more effective than the œstrogens in bringing about retention of nitrogen. Progesterone, in the doses employed, was without effect on the calcium, phosphorus or nitrogen balances.

The therapeutic use of œstrogens and androgens in patients with post-menopausal osteoporosis and in old women with fractured hips is discussed. While aware of the difficulties of accurately evaluating the results of such therapy, the authors are optimistic regarding its value in both conditions, more definitely so in the former. The dosage scale used was as follows: diethylstilbœstrol, 0.5 to 1 mgm. daily by mouth; œstrone sulfate, 2.50 to 3.75 mgm. daily by mouth, œstradiol benzoate, 1.66 to 3.32 mgm. three times a week intramuscularly; œstradiol diproprionate, 5 mgm. weekly intramuscularly; methyltestosterone, 10 to 20 mgm. daily by mouth; testosterone proprionate 10 to 25 mgm. weekly intramuscularly.

Testosterone was also given with equal or greater effect by subcutaneous implantation. One or two 75 mgm. tablets of testosterone (Schering) so implanted had an effect lasting 3 to 6 months. An androgen was usually given in combination with the œstrogen for the first 6 to 12 weeks of treatment. The authors mention the dangers of excessive œstrogen therapy, and emphasize the carcinogenic potentialities of œstrogens. As a precautionary measure they interrupted œstrogen therapy every 4 to 6 weeks for 1 to 2 weeks. Vaginal smears (prepared and examined to detect early uterine cancer) were done every 6 months. Any unexplained vaginal bleeding was fully investigated. Vaginal bleeding as a direct result of excessive œstrogen therapy was sometimes treated with progesterone (5 mgm. intramuscularly for 5 days every 4 to 6 weeks) or anhydro-hydroxyprogesterone (40 to 60 mgm. daily by mouth for 5 days every 4 to 6 weeks). A high protein diet is recommended as supplementary treatment. In view of the fact that prolonged immobilization of itself may permit osteoporosis to develop, the duration of bed rest should be kept at a minimum.

W. LOCKE

Dermatology

The Cutaneous Lesions in Acute Meningococcæmia. A Clinical and Pathological Study. Hill, W. R. and Kinney, T. D.: *J. Am. M. Ass.*, **134:** 513, 1947.

Since one of the earliest and most reliable clinical signs in meningococcæmia is a cutaneous rash the authors have based their study on 25 cases taken from the autopsy files of the Peter Bent Brigham, Boston Children's and Boston City Hospitals in which cutaneous lesions had occurred in the course of their fatal acute meningococcic syndrome. It is believed that after primary localization in the nasopharynx the organism enters the blood stream. In this stage of bacteræmia the meningococci metastasize to the skin, eyes, joints, heart, adrenals or meninges. The purpuric cutaneous lesions with bilateral adrenal hæmorrhages constitute the long-recognized Friderichsen-Waterhouse syndrome. The incidence of rashes in meningococcic infection cannot accurately be determined but the apparent greater incidence during epidemics is probably due to a heightened accuracy of observation at such times. The morphology of the rash includes the usual types of exanthematous primary skin lesions in various combinations, the hæmorrhagic types predominating. The extremities and regions subjected to pressure or friction showed the lesions most prominently, the petechiæ favouring the small joints of the extremities and purpura the larger segments and back. The fundamental pathological skin lesion is diffuse vascular damage. Such damage was also exhibited throughout the serous surfaces of other organs. Meningococci could be identified in the swollen endothelial cells of the smaller vessels and capillaries, the damage resulting from the rupture of the endothelial linings being followed by vascular necrosis and diapedesis of red cells. The vessels accompanying the sweat glands showed these changes, usually with a thrombosed vessel in close proximity to a group of degenerated glands. The swelling, pallor and vacuolation with eventual destruction of the cells of the acini of sweat glands is due to an ischæmic necrosis due in turn to interference with the blood supply as exhibited by the damaged and thrombosed accompanying vessels. The late complication of gangrene of the skin and extremities is probably also the result of a similar process. In all these lesions where sections of skin were available for study it was possible to identify meningococci.

D. E. H. CLEVELAND

Dermatitis Due to Quinacrine Hydrochloride (Atabrine). Nisbet, T. W.: *J. Am. M. Ass.*, **134:** 446, 1947.

The papers published on this subject have dealt chiefly with the lichenoid type of cutaneous reaction, variously described as hypertrophic lichen planus, New Guinea disease or tropical lichen planus. This type comprises only about 12% of the dermatoses produced by this drug. There are two other types, the eczematoid, comprising about 80% of the cases, and the exfoliative type which may be primary, but is frequently secondary to the other forms mentioned. American prisoners of war in the Philippines and military personnel serving in malaria-free areas of the tropical Pacific, living under identical conditions as those in the New Guinea campaign differed from them only in that they received no quinacrine hydrochloride, and did not develop the eruption. This must be emphasized since the eruption was at first ascribed to contacts with jungle vegetation, fungus and other infections, heat and sweating, other drugs, etc., but study eventually demonstrated that only one common factor was present in all showing the eruption—quinacrine hydrochloride. It has been stated that the disease did not occur in the Mediterranean theatre, although certain units exposed to malaria received this drug. Nevertheless several cases of the lichenoid type occurred in British soldiers and were presented before the Section of Dermatology of the Royal Society of Medicine, although the cause was not at the time recognized. Immediate reactions such as pruritus, urticaria and exfoliative dermatitis are considered to be allergic in character, and later appearing scarlatiniform and morbilliform rashes can be explained on a biotropic basis such as Milian's ninth day erythema. The late reactions, resulting from the cumulative effect consequent upon the long retention of the drugs in the

body, including visceral as well as cutaneous damage strongly suggest a toxic reaction. Treatment consists of preventive measures, especially withdrawal of the drug upon signs of incipient cutaneous reaction, and the avoidance of other actively toxic drugs such as arsenic, gold, mercury and sulfonamides; measures against the eczematoid type, in which only the blandest topical medicaments are permitted and control of secondary infection by means of penicillin, are generally required; and dealing with the lichenoid types by high caloric and vitamin diet, mild antipruritic ointments and occasional roentgen therapy in resistant cases. D. E. H. CLEVELAND

Clinical Use of a New Antihistaminic Compound (Pyribenzamine) in Certain Cutaneous Disorders. Osborne, E. J., Jordon, J. W. and Rausch, N. G.: *Arch. Dermat. & Syph.*, **55:** 309, 1947.

Most investigators are of the opinion that histamine and the H-substance (histamin-like substance), upon which allergic reactions depend, are identical or nearly so. Many have sought for a means to neutralize H-substance and thus prevent allergic reactions. From the study of a group of synthetic benzhydryl alkamin ethers, two were found which were far superior to the previously-developed series of Forneau antihistamin drugs, some of which were too toxic for human use. One of the benzhydryl alkamin ethers (beta-dimethylaminoethyl benzydryl ether hydrochloride) has been prepared for clinical use in human beings and marketed under the name benadryl. A newer group of compounds known as pyridil-ethylenediamines has been studied and one (N' pyridil-N' benzyl-N-dimethylethylenediamine) was called pyribenzamine. From laboratory tests pyribenzamine has been found far more effective than benadryl. The authors report the effects on 122 patients with various cutaneous disorders. They also investigated 16 patients with atopic dermatitis in which wheals produced by the intradermal injection of a series of allergens were treated with the drug with a view to obtaining a basis for prediction of the therapeutic action of pyribenzamine on such patients. This they were unable to obtain. In acute urticaria from 100 to 400 mgm. per day was given over periods of 2 to 14 days. The results were approximately the same as those obtained by benadryl. In chronic urticaria from 200 to 300 mgm. per day was given over periods of 6 days to 6 months. The results here also were approximately the same as experienced in the use of benadryl. In chronic atopic dermatitis the impression was obtained that pyribenzamine is definitely palliative for approximately two-thirds of the patients. In patients with chronic dermatitis venenata, most of them suffering from industrial dermatitis, the drug did not appear to have any effect. In 4 patients with dermatitis herpetiformis, 3 received complete symptomatic relief and the eruption healed. The relief was not greater than that following the ingestion of sulfapyridine, but it was much more prompt. In the authors' opinion reactions from pyribenzamine are considerably less than those from benadryl when given in comparable dosage in the same type of case. D. E. H. CLEVELAND

Neurology

Japanese B. Encephalitis. Lewis, L., Taylor, H. G., Sorem, M. B., Norcross, J. W. and Kindsvatter, V. H.: *Arch. Neurol. Psychiat.*, **57:** 430, 1947.

This is a report on an outbreak of Japanese B encephalitis that occurred in 1945 on Okinawa Shima. The disease was most common among children, resulting in a mortality of approximately 20% and caused significant permanent disorders of the nervous system of variable degree in at least one-fifth of the patients. The disease is one of a large group of arthropod-borne neurotropic virus infections which have been identified as the cause of serious epidemics. The disease cannot be diagnosed without resort to specific tests. However, it may be suspected on clinical grounds when in known endemic or epidemic areas patients with sudden onset of fever and headache exhibit progressive signs of meningeal irritation, followed by evidence of diffuse disease of the nervous system. Recognition of the syndrome is not always easy, and the clinical status varies, not only from case to case, but often at short intervals in the same case.

There is no specific treatment. During the period of coma it is urgent that nutrition be maintained by gavage, intravenous administration of fluids and the use of vitamin supplements. Depletion of body protein is sometimes extreme and should be treated with plasma or amino acids. PRESTON ROBB

Cerebellar Medulloblastoma in Adults. Spitz, E. B., Shenkin, H. A. and Grant, F. C.: *Arch. Neurol. Psychiat.*, **57:** 417, 1947.

These authors review 97 consecutive cases of verified medulloblastomas of whom 30 were 16 years of age or older. The average duration of symptoms prior to operation in the adult group 3.8 months. The extremes were one and nine months. Medulloblastomas in adults occur more frequently in the cerebellar hemispheres, than do similar tumours in childhood. In this series approximately 50% were primarily hemispheric in location. Regardless of the difference in the site of origin, the clinical picture in adults did not differ from the usual syndrome noted in childhood. Regardless of location, the vast majority of the patients first showed signs of acute, progressively increasing intracranial pressure. The tumours of this group were histologically identical with those seen in the childhood group. The survival period in adults as a group, was definitely longer than that in children.

In the same issue of this journal (p. 481) Penfield and Feindel report a case of a woman who first developed symptoms of a medulloblastoma of the cerebellum at the age of 22. She was treated with surgical excision, and deep x-ray, and survived 17 years. PRESTON ROBB

Pathology

Residual Epithelial Cells on the Pulmonary Alveolar Walls of Mammals. Macklin, C. C.: *Trans. Roy. Soc. Can.*, 3rd Series, **40:** Sect. V. p. 93.

Epithelial cells resembling in some respects those of the finer bronchioles were found singly or in small groups on the alveolar walls of lungs from man, domestic cat, rabbit, monkey, guinea pig, goat, dog, baboon, rat and mouse. They were set in the midst of areas devoid of epithelium or visible extensions therefrom in the sections studied. In silvered preparations viewed *en face* the dome-shaped free surface of each cell showed many silver particles and was bounded by a heavy silver line. Around the single nucleus was a row of clear rounded granules or "vacuoloids". Collectively these residual epithelial cells, which are also known as septal cells, epicytes, niche cells and other terms, are regarded as forming an important mass. They may possibly become malignant and form the basis of a primary cancer of the lung. Their rôle in the production of phagocytes which clear the airway terminals of particles of dust which have entered in the air taken in during breathing is regarded as important. C.C.M.

Five Types of So-called Bronchial Adenoma. A Histopathological Study. Sano, Capt. M. E. and Meade, Lieut.-Col. R. Jr.: *Arch. Path.*, **43:** 235, 1947.

The authors present five cases of bronchial adenoma all of which had been bronchoscoped. In the one fatality, a 51-year old male, the tumour was malignant, having extended into the upper lobe of the lung, although it had not metastasized to lymph nodes or other organs. The tumours were considered to be "mixed", the two component cells being of epithelial origin similar to the gland structures found in the membranous interval separating the cartilages from one another.

It was stressed that the treatment of choice was pneumonectomy. Although the pedicle of the adenoma may be free of tumour cells, these may exist in the deeper tissue and, as a result, the adenoma will recur following simple removal. G. F. KIPKIE

Industrial Medicine

Conserving the Health of Management. Lutz, E. F.: *Occup. Med.*, **2**: 599, 1946.

Although the importance of proper industrial management has long been recognized, it is only recently that the conservation of the health of this group has received any consideration. In this article the author discusses the development and growth of the plan for the health examination of the management group in General Motors Corporation. He stresses the value of the annual diagnostic health examinations, of compulsory vacations and of health education. The plan was approved in August, 1944, after a study by the medical department of the General Motors Corporation had indicated the inadequacy of their health maintenance program for the supervisory group. Special annual diagnostic examinations by physicians or clinics of their own choice were recommended. During the first year over 900 persons were examined; of these approximately 30% were found to have significant impairment of health. At a conference in November, 1945, attended by representatives of the examining clinics, a suggested routine for the primary examination was discussed.

In conclusion the author summarizes the main points which he considers necessary for the success of a plan for diagnostic health examinations, as follows: (1) The plan must be on a voluntary basis. (2) Reports must be confidential and must be made only to the person examined or the physician whom he designates. (3) The examining clinic must have a terminal interview with the person examined during which the physician informs the person examined in layman's terms of any impairments which he has discovered. (4) A short written report in layman's language, as well as a more highly technical report for the study of a physician, is of paramount importance. (5) There should be some method for notifying the executive when it is time for his repeat examination. (6) The examinations given should be thorough and without too much delay. (7) Approval of all charges and diagnostic procedures is necessary, but charges for restorative or curative treatment should not be approved. MARGARET H. WILTON

Lung Changes Associated with the Manufacture of Alumina Abrasives. Shaver, C. G. and Riddell, A. R.: *J. Indust. Hyg. & Toxicol.*, **29**: 145, 1947.

In this article the authors describe a series of cases of lung disease presenting unusual features, which occurred among persons engaged in an industrial process which had previously been considered innocuous. The process concerned is the manufacture of corundum, an aluminum oxide of great hardness, which is widely used as an abrasive. The process involves exposure to alumina and silica, both in a very fine state of division and to small quantities of many other substances. It is carried on in four separate industrial concerns.

Examination of three patients from these plants in 1942 had disclosed a peculiar type of lung shadowing in the radiograph together with a pneumothorax. Examination of three additional workers in 1944 had disclosed similar findings. Because of these findings, clinical data relating to the situation was compiled and referred to the Division of Industrial Hygiene of the Ontario Department of Health. Arrangements were then made for a detailed investigation, the medical findings of which form the basis of this report.

Only those workers employed in connection with the electric furnaces manifested this specific type of lung disease. Of the 344 furnace operators, 35 had definite radiological evidences of disease and 13 others showed "doubtful" lung changes. Seven cases have been fatal; in several others the disease has progressed rapidly and has produced serious disability.

After briefly outlining the process, the authors present details of symptomatology, physical findings, x-ray findings, and, in four cases, autopsy findings. Figures are included to show the microscopic appearance of the lung changes and a table gives data regarding history and present status of 23 of the cases. The authors note the similarity, particularly in regard to the accompanying lung changes and to the occurrence of spontaneous pneumothorax, to certain cases described in recent German literature in which are presented the effects of inhaled aluminum dust on the lungs. In both countries the cases seem to have occurred under similar circumstances of increased production. The processes differed considerably but it is the authors' opinion that there may be a significant common factor. MARGARET H. WILTON

Obstetrics and Gynæcology

Surgical Geriatric Gynæcology. Lash, A. F.: *Am. J. Obst. & Gyn.*, **53**: 766, 1947.

Gynæcological surgery may be performed in old women (past 60 years) under urgent, imperative, or elective conditions with proper preoperative precautions, selection of anæsthesia (usually local), careful, meticulous operative procedures, and proper postoperative care. The higher mortality rate in older people was due to sepsis, shock, embolism pneumonia infections, uræmia, cardiac failure, but also due to the higher incidence of malignancies. With chemotherapy and blood transfusions, the most common operative complication may be combated, Hypertension without marked cardiac damage is no great hazard. It may be improved by overcoming the partial ureteral obstruction and its resultant effect on the kidneys, in the correction of pelvic herniosus with the prolapsing uterus. The relief experienced by an old woman with procidentia with good life expectancy more than balances the risk involved in the surgical care, thus adding a happy comfortable life to her years.

ROSS MITCHELL

Radiology

Late Changes in Mucous Membrane of the Irradiated Larynx. Windholz, F.: *Radiology*, **48**: 3, 1947.

Microscopic study of the mucous membrane of the cancerous larynx after protracted fractionated irradiation reveals that the primary effect of irradiation is cell destruction. At the time fibrinous reaction occurs, the mucous membrane is entirely destroyed. Later, regenerated epithelial structures which often replace the columnar epithelium are also metaplastic, revealing excessive cornification. This metaplasia has also been produced by irradiation in animal experiments.

The structure of the regenerated epithelium varies according to the post-irradiation condition of the subepithelial connective tissue. In two cases out of ten the subepithelial connective tissue of the larynx was transformed into hyaline sclerotic tissue with large amounts of interstitial collagen, few cells, and obliteration of blood vessels. In these two cases, the epithelium was markedly atrophic and the tumour of the larynx had disappeared. Clinically, strong fibrin reaction was observed. In two other cases displaying large residual or recurrent tumours, the superficial epithelium exhibited definite tendencies toward atypical growth after irradiation. The connective tissues were remarkably well preserved in these cases and clinically no fibrin reaction was observed.

These studies indicate that, while the primary epithelicidal radiation effects are fading out, the changing generations of metaplastic epithelium adapt the growth and differentiation properties of their structures to the post-irradiation condition of the subepithelial connective tissue. In cases in which the tumour has disappeared,

advanced diffuse atrophy (fibrosclerosis) of the connective tissue and epithelium is observed. R. C. BURR

Pulmonary Sarcoidosis: The Early Roentgen Findings.
Garland, H. L.: *Radiology*, **48:** 333, 1947.

The most frequent type of sarcoidosis encountered clinically is one with hilar lymphadenopathy and pulmonary infiltration. Increasing numbers of such cases are being discovered in routine chest surveys and are being interpreted as tuberculosis, Hodgkin's disease, mediastinal tumour, and other entities. It is desirable that the possibility of sarcoidosis be kept in mind in such instances, and the attempt made to establish the correct diagnosis by microscopic examination. "Sarcoidosis should be considered in the differential diagnosis of all cases of chronic painless lymphadenopathy, whether there are demonstrable lesions of the skin, bones and lungs, or not. The diagnosis is not established by pathological examination alone, but only in conjunction with the appropriate clinical and bacteriological evidence to eliminate other granulomatous infections."

A palpable lymph node or skin nodule is the most desirable tissue for microscopic examination. However, when none such is evident, exploration of the mesial end of the right supraclavicular fossa through a short incision will frequently yield an upper anterior mediastinal node for study and positive diagnosis.

In the absence of microscopic evidence of non-caseating tubercles, there are certain roentgen findings suggestive, but not pathognomonic, of the disease. These include extensive bilateral nodular parenchymal densities in persons having no symptoms of disease, and especially the combination of nodular densities with bilateral hilar and right paratracheal adenopathy. Grossly enlarged hilar nodes alone, in an apparently healthy person, are also a highly suggestive sign.

Absence of pulmonary involvement at one stage of sarcoidosis is no assurance that it will not be silently present months or years later. The course of a given case is usually quite unpredictable. The lesions may regress, remain stationary, or progress without apparent reason. This renders estimation of the beneficial effects of therapy, such as roentgen irradiation, extremely difficult. Some cases progress to diffuse, coalescent pulmonary fibrosis, with variable degrees of cardiac embarrassment. Only one of our cases appeared to show such a complication. In some, coincidental tuberculosis develops; one of our patients has calcified lesions in one pulmonary apex (pre-existing obsolete tuberculosis?); none has developed frank phthisis to date. Cerebral, meningeal, or cardiac involvement may lead to a fatal outcome. This could not be proved in any of our cases. R. C. BURR

OBITUARIES

Dr. Antonio Barbeau, died in a Paris hospital on June 13, after a brief illness. He was only 46 years old but had already achieved an enviable reputation in Canadian medical circles.

At the time of his death, Dr. Barbeau was chief of the neurology department at the Hotel Dieu, professor of neurology at the University of Montreal, consulting neurologist at the Montreal Neurological Institute and superintendent of the criminally insane wing at the Montreal jail at Bordeaux.

Born in Montreal, and educated at College Ste. Marie before taking his medical degree at the University of Montreal, Dr. Barbeau studied neurology at Montpelier and the Sorbonne in France, and at Harvard. He won a Rockefeller Fellowship in 1923 and went to Europe in 1924. In 1929 he was elected secretary of the A.C.F.A.S. (French-Canadian Association for the Advancement of Science) and the next year was named president of Association des Anciens d'Europe, composed of former students in Europe. University of Montreal conferred a Doctor of Philosophy degree on him in 1930 and in 1932 he presided at the Kingston convention of the Canadian Physiological Society. He was made an honorary member of the Montreal Medical Society in 1936. He was a member of the Montreal Physiology Society and a one-time president of the Federation of Scouts of the Province of Quebec.

Dr. William Boyman Howell, who for 20 years was anæsthetist to the Royal Victoria Hospital, Montreal, died in England on June 6 in his 74th year.

Born in Montreal, he was a grandson of Archdeacon W. T. Leach, professor of classics and vice-principal of McGill from 1846 to 1886. He was educated at Felsted School in England, and continued his studies in Montreal, graduating in medicine at McGill in 1896, later teaching in the physiological department and practising.

In 1915 he went overseas with No. 3 General Hospital, and served for most of the war with No. 9 Field Ambulance. On his return in 1918, he received the appointment as the first full-time anæsthetist at the Royal Victoria Hospital. Since his retirement in 1937 he has lived at Ringmore, Shaldon, Devonshire. During the late war he was in charge of the first aid post of the Shaldon district and served as voluntary anæsthetist in the hospitals of Exeter and Torquay.

Dr. Howell was an accomplished writer. Known for his witty conversation and his satirical verses, he made a name for himself as the author of more serious articles and of such books as his history of medicine in Canada, 1933, and "F. J. Shepherd, surgeon, his life and times", in 1934.

In 1928, Dr. Howell married Jean Cameron, then medical librarian at McGill. He is survived by his wife in Shaldon and by Dr. G. Rennie Howell, nephew, and Mrs. Munro Brown, niece, in Montreal.

AN APPRECIATION

Some men have the scholar's instinct without the opportunity fully to satisfy it, except in their general outlook. That was the case with Billy Howell. He chose medicine as his profession and was faithful to it to his very latest days. But his inclination was towards literature and exactitude of expression, and this increased as he grew older. At the age of 69 he casually referred to his studying Latin for a couple of hours every morning before breakfast. There was of course no conflict between these tastes and the practice of his profession—quite the contrary. He realized how much the one enriched the other, and bewailed with all the force of his astringent style the only too common lack of these educative influences amongst medical men. In one of his papers ("Mr. Gradgrind and Medical Education", *Canad. M. A. J.*, **24:** 854, 1931) he discusses "culture". Whilst no more successful in defining it than have been many others, he uses it as a text to exercise his irony. "Not even a B.A. degree" he says "carries with it any guarantee against mistakes in grammar. I remember the late Dr. Slater Jackson, of McGill University, expressing in my hearing fervent gratitude that he was not a Bachelor of Arts. When I asked him why, he told me that in his undergraduate days he was once comparing notes with two other students about their respective luck at an examination. One of them said, 'I done well', and the other, 'I did good'. Both of these men were Bachelors of Arts!"

In another place ("Reflections of an Anæsthetist", *Canad. M. A. J.*, **19:** 649, 1928) he speaks of the leisure that the anæsthetist gains from the regularity of his work, and pities the over-strenuous "hustler" who overworks: "Let him be careful not to take the cab-horse for his model, lest he also find himself with a drooping head and a range of vision limited to the road at his feet".

As one might expect, he was a worshipper of Dr. Johnson. Who else typified so completely his own im-

pelling desire to discuss and exactly express himself, both in talk and writing? He has a charming little sketch of a meeting that never took place between Samuel Johnson and John Hunter.

During his life in Montreal, that is, until his retirement from his hospital work in anæsthetics, Dr. Howell's literary output was mainly biographical and historical, with many miscellaneous letters and comments. One may gain from these some idea of his critical capacity, his sense of humour, and his loyalty to his ideals. But after he retired and went to live in England in 1936 his writing was chiefly in the form of letters. Educated as he had been in England he had for her a deep and abiding affection. But his roots in Canada were equally deep and firm. When therefore the war came he began and kept up a stream of letters to his Montreal friends. Many of these have been kept, by Dr. C. F. Martin, W. W. Francis, and F. J. Tooke. Not only do they reflect an unusual personality, but they recall a period of Great Britain's history which even the most constant reiteration cannot deprive of its tragedy, its courage, its beauty of resolution. Not that Billy Howell ever spoke of these things directly. Sententious he could not be. Perhaps the nearest he came to it was once in a letter to Dr. Martin in 1941, when he said:

"Is war the worst thing in the world? It's dreadful, but is it the worst? Isn't it the worst to shirk the final test of fighting? And isn't it fine to be British? We *seen* what had to be done and we *done* it! . . . I am glad I have been in England in her greatest hour. . . ."

To those who knew Billy Howell these letters have the special charm of recalling his vigorous and acid comments, his intensity and frankness, his keenly humorous outlook. I believe they would have an appeal even to the casual reader, for they rank very high in that difficult form of literary expression, the letter. One can see the influence of his Johnsonian training in the neatness and firmness of his style, and can think of him enjoying with his hearty chuckle his pithy and often trenchant comments on men and affairs. His wit could be mordant, but there was no malice in it.

It is hard to realize that these letters were written by a man advanced in years, and not in good health, whose peacefulness and comfort had been irretrievably destroyed. Denunciation of what led to such misery may be found in them, but of complaint for himself there is none. His sturdiness of spirit was never more in evidence. H.E.M.

Dr. Frank B. McIntosh died on May 16, at Ste. Anne's Military Hospital, Que. Born in 1886, at Dundela, Dundas Co., Ontario, Dr. McIntosh was educated at Morrisburg and Kingston High Schools. Upon graduation from the Faculty of Medicine, Queen's University, in 1908, he practised medicine at Manitoulin Island till the outbreak of the first world war.

He served with the R.C.A.M.C. from 1915 to 1918, returning to take a position on the staff of the Selkirk Mental Hospital, which he later left to take up private practice.

With the outbreak of World War II, Dr. McIntosh joined the staff of the Ste. Anne's Military Hospital when the cry went out for doctors.

He is survived by his widow, a daughter, and a son.

Dr. William Lawson Mann, distinguished as scholar, chest surgeon, medical director and public citizen, was drowned at Minaki, Ontario, on May 31, when his boat capsized.

Born at Stockton-on-Tees, Durham, England, in 1885, he came with his parents in 1903 to the Original Barr colony at Lloydminster, Alta. Two years later he entered Wesley College, Winnipeg, where he obtained his B.A. degree, then went to the Medical College graduating M.D., C.M. in 1914. Throughout his scholastic career he stood consistently at or near the top of his class. Soon after his graduation World War I broke out. In 1915 he went overseas as an officer with No. 3 Canadian Casualty Clearing Station, headed by the late Lieut.-Col. R. J. Blanchard. During the war he earned distinction as a chest surgeon. His attention had been turned to diseases of the chest when he served under the late Dr. D. A. Stewart at Manitoba Sanatorium, Ninette.

Returning to Winnipeg in 1919 he engaged in practice, especially chest surgery, and was appointed Associate Professor of Clinical Surgery, University of Manitoba. In 1926 he joined the Great-West Life Assurance Company of Winnipeg as associate medical referee. In 1931 he became chief medical referee and in 1946 medical director. He was a Fellow of the Royal Canadian College of Surgeons and the American College of Surgeons. He contributed papers on chest conditions to the *Canadian Medical Association Journal* in 1924 and the London *Lancet* and the *British Medical Journal* in 1930.

He was a member of the Board of Governors of the University of Manitoba, of the Y.M.C.A. Board of Directors, and of the Manitoba Club, the St. Charles Country Club and the Winnipeg Winter Club.

His widow, a son and three daughters and three grandchildren survive him.

Le Dr J.-A. Rousse est décédé le 24 mai à l'âge de 70 ans, après une brève maladie, en son domicile à Montréal.

Né à Montréal, le Dr Rousse avait fait ses études au collège Saint-Laurent et à l'Université de Montréal, où il avait été reçu médecin en 1905. Il s'était dès lors établi dans la paroisse de Saint-Edouard, qui n'en était qu'à ses débuts, et, durant le reste de sa vie, s'est donné entièrement à la pratique de sa profession.

Outre sa femme, il laisse un fils, et une fille.

Dr. Thomas Sawdon, aged 66, native of Edgeley, York County, died recently at Three Hills, Alta. He received his early education in Toronto and, after graduating in arts from the University of Western Ontario, taught school for a time. Later he returned to the University of Western Ontario and was graduated in medicine. Active worker in the United Church, Dr. Sawdon was on the official board and for some years had served as superintendent of the Sunday school.

Surviving are his widow, two daughters, and a son.

Dr. E. M. Sharpe, aged 85, died recently at his home in Lacombe, Alta.

Born in New Brunswick, April 19, 1862, Dr. Sharpe took his preliminary examinations and was admitted to McGill University at the age of 28, and graduated, with his degree in 1894.

The same year, he moved west, settled in Wetaskiwin, where he stayed for about two years before coming to Lacombe.

Dr. Sharpe took an active part in the formation of the first hospital here, which was built in 1907. During his early days as a medical practitioner, he made many calls to Mirror, Erskine, Iola and Gilbey districts, travelling by horse and buggy, and often taking two and three days to complete a single call. In 1921 he purchased his first car, one of the first in the district.

Dr. Sharpe was appointed coroner here in 1905, and held this office for more than 30 years. From 1900 to 1905 he was medical attendent at the Indian Reservation at Hobbema. He served on the Lacombe school district board from 1904 until 1929, with the exception of one year, 1908, when he was elected mayor of Lacombe. He was a member of the old hospital board from the time of its inception in 1907, until the new hospital was built in 1938. He was also a past president of the Old Timers' Association here.

He is survived by two daughters and three brothers.

NEWS ITEMS

Alberta

Dr. W. Bramley-Moore, Registrar of the College of Physicians and Surgeons of Alberta, has announced that a voluntary health insurance scheme for this Province will be proposed at the annual meeting of the Canadian Medical Association, Alberta Division, to be held at Edmonton on September 10, 11, 12, 1947.

This health insurance proposal will offer voluntary prepaid medical care to the public. A similar scheme is in operation in British Columbia, by the British Columbia Medical Services Association and costs a family an average of three dollars and fifty cent a month. At a cost of forty-two dollars a year every Alberta family could buy their own medical care and have their own choice of a physician.

Among the guest speakers at the September, 1947, meeting of the Canadian Medical Association, Alberta Division, will be Dr. F. McGuinness, President and Dr. A. D. Kelly, Assistant Secretary of the Canadian Medical Association; Dr. F. Mathewson and Dr. K. Trueman, of Winnipeg and Dr. A. Blair of the Saskatchewan Cancer Service.

G. E. LEARMONTH

British Columbia

The Annual Summer School meeting of the Vancouver Medical Association was held June 2 to June 6, at the Hotel Vancouver and was very successful. Attendance was over four hundred and the papers were of a very high order of excellence.

Dr. H. M. Kidd of Vancouver is the first Canadian to receive the Osler Medal from the American Association of Historical Medicine. The award was for Dr. Kidd's thesis on the work of the B.C. physician Dr. J. S. Helmcken.

Mr. Bruce R. Buckerfield, President of the British Columbia Division of the Canadian Cancer Society, and Dr. M. R. Caverhill of Vancouver, represented British Columbia at a recent meeting of the Canadian Cancer Society in Winnipeg. This meeting was held to discuss Canada's policy of public education to combat cancer.

The death of Dr. S. C. MacEwen, of New Westminster, on June 18th, marks the passing of a man who has filled many positions in medical affairs. He was, at one time, a member of the Council of the College of Physicians and Surgeons of British Columbia, and had recently been the Chief Medical Referee of the Medical Services Association. He was a graduate of McGill University and had been practising in British Columbia since 1909.

The congratulations of the profession are due to Dr. R. W. Irving of Kamloops, who has recently been made a life member of the Canadian Medical Association.

There is, at present, a small sized epidemic of anterior poliomyelitis in Vancouver. Some thirteen cases have been reported to date; they appear to be of a mild attack but have created considerable public anxiety.

Dr. F. L. Whitehead (Dalhousie 1935) has been appointed to the position of Executive Secretary of the College of Physicians and Surgeons of British Columbia succeeding Dr. M. R. Caverhill who left this post some months ago to become Chief Medical Officer of the Workmen's Compensation Board. Dr. Whitehead served in the Royal Air Force from 1936 to 1946 and was discharged with the rank of Wing Commander.

Dr. D. B. Avison has been appointed to the Directorship of Unit No. 3, of the Metropolitan Health Committee of Vancouver. He has recently been serving in China with UNRRA.

The Vancouver Medical Association mourns the loss of Dr. T. F. Saunders, one of its Life Members. Dr. Saunders has been in B.C. since 1907 and was a veteran of both World Wars.

J. H. MACDERMOT

Manitoba

A controversy has arisen over the attempts of the Manitoba Government to compel students who enroll for medicine next fall to undertake to practise in Manitoba for the three years following graduation. The College of Physicians and Surgeons, the Manitoba Medical Association and the faculty of the Medical College have protested strongly. A conference between medical representatives, the university board of governors and the provincial cabinet was held, and the matter was referred to a committee which is now deliberating.

Dr. Margaret Owen and Dr. Anna Wilson left Winnipeg on June 16 for Montreal whence they will fly overseas to attend the 5th conference of the Medical Women's International Association at Amsterdam June 24 to 30. In July they will attend the 200th anniversary of the founding of the Rotunda Hospital, Dublin. Later they will go to Paris to be present at the meeting of the International Federation of Business and Professional Women.

On June 21, almost one hundred members of the Associated Canadian Travellers met at Manitoba Sanatorium, Ninette. There the president of the Brandon club of the A.C.T. presented to Major G. W. Northwood, chairman of the Sanatorium Board, a cheque for $12,000.00 and the chairman of the Tuberculosis Prevention committee of the Winnipeg Club presented to Dr. E. L. Ross, medical superintendent of the Board, a mobile x-ray unit valued at $26,000.00. At a dinner in honour of the A.C.T., Hon. Ivan Schultz, minister of health, thanked them for their fine citizenship. Other speakers were Dr. A. L. Paine, superintendent of Ninette Sanatorium, Russell Barrett, president of the Union of Manitoba Municipalities and D. L. Mellish, vice-chairman of the Sanatorium Board. Major Northwood stated that Clearwater Indian Hospital, north of The Pas is being extended to hold 250 patients at a cost of $350,000.00.

It is announced that the Abbott Clinic of Winnipeg have bought the Mall Plaza three-storey building at St. Mary's Avenue and the Mall. The ground floor of the building, now occupied by a D.V.A. training school, will be utilized for clinical purposes in December.

On June 22, the Sunday preceding the seventy-eighth annual meeting of the Canadian Medical Association, the following visiting doctors spoke from Winnipeg pulpits: Dr. T. C. Routley at Knox United, Dr. A. E. Archer at Westminster, Dr. Morley Young at Grace and Dr. H. E. MacDermot at St. John's United.

The annual meeting of the Canadian Medical Association has come and gone and the Manitoba hosts have nothing but happy memories of their visitors. The weather man was in fairly good mood except on the occasion of the garden party at the summer home of President and Mrs. F. G. McGuinness on June 22. Those who have been fortunate enough to meet President-elect William Magner of Toronto will realize that a wise choice has again been made and will wish him every success.

ROSS MITCHELL

New Brunswick

Dr. George Skinner of Saint John attended the meeting of the American Association of Thoracic Surgeons at St. Louis.

Arrangements have been completed for the first Crippled Childrens' Clinic at Campbellton, N.B. sponsored by the Rotary Club and Junior Red Cross. Specialists in attendance will be Dr. E. W. Ewart of Moncton and Dr. Geo. Keddy, Orthopædic Surgeons; Dr. Ross Wright of Fredericton, Eye, Ear, Nose and Throat conditions as well as Dr. Felix Dumont and Dr. Paul Dube of Campbellton. All members of the Restigouche Medical Society will assist.

Dr. Henrik O. Tonning of the Medical Staff of the Saint John General Hospital is leaving shortly to take up a fellowship in Pathology at the Banting Institute at Toronto.

Dr. Harvey Agnew of Toronto was a welcome visitor in New Brunswick in June where he was the principal speaker at the Institute of Maritime Hospital Administration and at the Annual Meeting of the Maritime Hospital Association.

Dr. C. R. Trask has been appointed Medical Health Officer for Saint John District and will act as chairman of the Board of Health. Dr. Trask recently graduated from the School of Hygiene at Toronto University and is at present doing field work in the United States. Dr. Trask previously held appointments in the R.C.A.M.C. and at Riverglade Sanitarium.

Dr. J. D. Gauthier, B.A., M.A., of Shippegan received his Ph.D. degree at the recent convocation of St. Joseph's University.

Dr. G. B. Peat was elected president of the Saint John District Council of the Boy Scouts Association. He succeeds Dr. L. DeV. Chipman who now is located in Wolfville, N.S.

Dr. W. O. McDonald, Chief of the Medical Staff of the Saint John General Hospital was the special speaker at the graduation exercises of the nursing school in June. His excellent address stressed that a good nurse required charity and correct thinking as well as efficiency. In spite of scientific advances the fundamental requirements for good nursing have not changed. To comfort and heal the sick was the only goal of the medical and nursing branches of our calling.

At the first annual meeting of the Queens Sunbury West Memorial Hospital at Fredericton Junction, Hon. Dr. F. A. McGrand was elected President and Dr. W. M. Jenkins of Gagetown was elected Secretary.

Hon. Dr. F. A. McGrand, Minister of Health for N.B. has announced the appointment of Dr. D. F. W. Porter as director of hospital services under the department in this province. This is a new departure in New Brunswick. Dr. Porter, a graduate of McGill, practised pædiatrics in Saint John. His army service in the last war was extensive in administrative branches in Canada, England and on the Continent. He was recently medical superintendent of the D.V.A. Hospital at Sussex, N.B.

At the annual meeting of the N.B. Society of X-Ray Technicians held at Moncton, Dr. W. A. Farrell of the Lancaster D.V.A. Hospital presented a paper "The Importance of Intravenous Pyelography in Renal Tract Examinations" and Dr. H. R. Ripley of the Moncton City Hospital addressed the meeting on the subject of "Positioning in Radiography of the Chest".

A. S. KIRKLAND

Nova Scotia

Judged by all standards, the Winnipeg meeting was a success. Our hosts excelled themselves in displaying Western hospitality and with fine weather to assist them, the social aspects of the program left nothing to be desired. We encountered one elderly gentleman having some difficulty in securing the type of hotel accommodation he desired, stating with some emphasis that, "all women should be left at home". Evidently many did not agree with him, for doctors' wives were there in representative numbers and were royally entertained by their sisters in Winnipeg. The scientific program was very full and well integrated, and the material presented of a high order.

It was good to meet some old friends: Dr. T. A. Lebbetter, formerly of Yarmouth, is now practicing in Winnipeg, giving special attention to cardiovascular disease and is apparently in good health and spirits. Dr. Walter C. MacKenzie, since his discharge from the Navy, has been in Edmonton. Dr. Harold E. Baird is superintendent of the Regina General Hospital. He is faced with an expansion program, and appears to be doing an excellent job. Dr. Fred Wigmore, likewise in the West, is confining his attention to surgery.

It was nice to see Dr. Donald R. Webster again, who is once more established in Montreal. He plans to spend a vacation in Nova Scotia this summer, accompanied by Dr. Boris P. Babkin of McGill University, onetime Professor of Physiology at Dalhousie University.

Nova Scotia was not largely represented but those present did all they could to maintain Maritime Rights, along with their confrères from Prince Edward Island and New Brunswick. The indications are that the next meeting will be held in Toronto, which will give an opportunity for a large number to attend. H. L. SCAMMELL

Ontario

Dr. H. Jean Leeson has opened her office at Leaside, Toronto, for the practice of pædiatrics. She has been associated with Dr. E. W. McHenry, School of Hygiene, University of Toronto, for the past five years, working on nutrition surveys.

Dr. John Edward Sharpe has been appointed superintendent of the Toronto General Hospital. At present he is Assistant Deputy Minister of Health for Ontario.

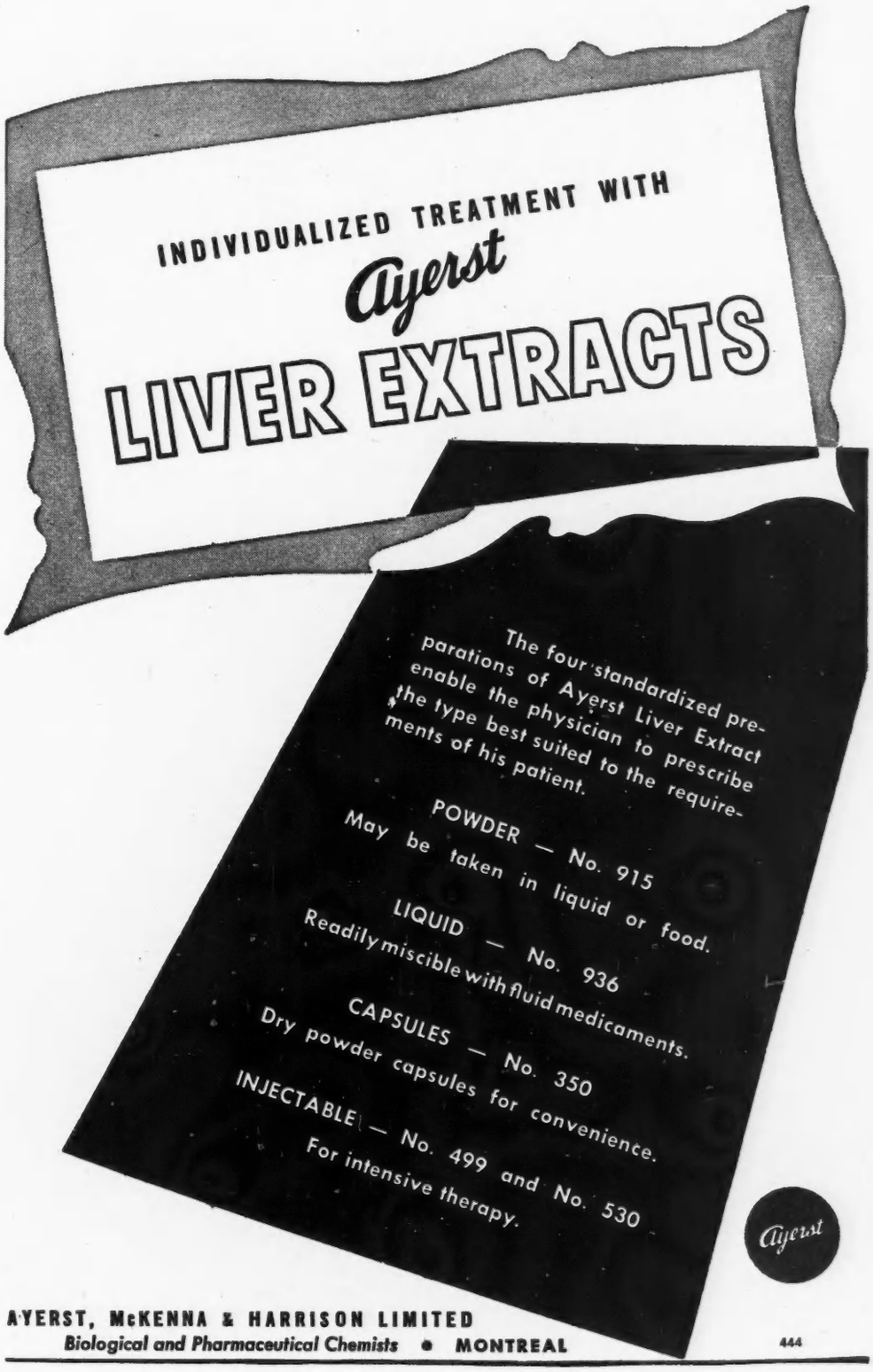
He graduated from the University of Western Ontario in 1930 and has been with the Provincial Department of Health since that time except for the five years he served in the R.C.A.F.

Dr. N. Goormaghtigh, Professor of Pathology, University of Ghent, Belgium, recently spoke to the Physiological Society of the University of Toronto, on "The Endocrine Function of the Renal Arterioles and its Relation to Arterial Hypertension".

LILLIAN A. CHASE

The retirement of Professors Duncan Graham and W. E. Gallie from the Faculty of Medicine, University of Toronto was marked by their colleagues in a manner that would leave no doubt of the high esteem in which they are held. Professor Graham has occupied the Chair of Medicine for twenty-eight years. He was the first in the British Empire to be appointed to a whole time professorship in Medicine. The experiment—for such it was—has proved the idea of whole time service in such a position to be such a success that it has become a precedent in Great Britain and in Canada. On June 12, Dr. Graham was given a complimentary dinner and presented with his portrait. At the Convocation of the University on June 26 he was granted the degree LL.D. *honoris causa*.

On June 19, Professor Gallie was guest of honour at a dinner in the York Club. He too was presented with his portrait and was given the additional honour of a complimentary collection of essays on surgical subjects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written by members of his staff and by graduates of the three-year course of postgraduate study in surgery which he inaugurated early in his professorship. These essays numbered fifty-two and the manuscripts were beautifully bound in three large volumes. They will later be printed by the University Press.

On June 10, the Advisory Board of St. Michael's Hospital Toronto and the Sisters of St. Joseph gave a dinner to six members of staff who were retiring under the University age limit regulations. Four heads of departments, Dr. Harris McPhedran, Medicine, Dr. George E. Wilson, Surgery, Dr. N. D'Arcy Frawley, Gynæcology and Obstetrics and Dr. J. X. Robert, Otolaryngology, had served the university and the hospital for periods of twenty to forty years. Dr. T. A. Robinson head of one of the services in surgery and Dr. Gordon Foulds head of genito-urinary surgery also retired after twenty years or more of service. Dr. E. F. Brooks succeeds Dr. McPhedran, Dr. Keith Welsh becomes surgeon in chief, Dr. Frank O'Leary takes the mantle of Dr. Frawley and Dr. Joseph Sullivan succeeds Dr. Robert.

Dr. T. W. Tice of Hamilton, Ont., was elected president of the Aero Medical Association succeeding Rear-Admiral J. C. Adams, U.S. Navy.

Dr. Charles Best, in recognition of "exceptionally meritorious service in the field of scientific research and development, was awarded the United States Legion of Merit, degree of officer, by U.S. Consul General A. C. Frost.

M. H. V. CAMERON

Quebec

Le Dr L. C. Simard, agrégé d'anatomie pathologique à l'U. de Montréal et médecin de l'hôpital Notre-Dame a été élu vice-président de l'Institut national du cancer.

Le Dr Albert Jutras, radiologiste à l'Hôtel-Dieu de Montréal a été élu récemment président de la "Contemporary Art Society."

Un nouvel hôpital, au coût approximatif de $750,000 sera érigé sous peu à Grand'Mère et sera dirigé par les Filles de Jésus.

Le Conseil de la Faculté de médecine de l'U. de Montréal vient de faire les nominations suivantes: le docteur Paul Dionne (assistant en bactériologie), Jacques Lussier (assistant en physiologie), Roméo Rochette (assistant hospitalier en anesthésie à l'Hôtel-Dieu), Léon Longtin (assistant universitaire en anesthésie à l'Hôtel-Dieu), J.-A. Deslauriers, Edouard Lortie et Loyola Perras (assistants en anesthésie à Sainte-Justine), C.-H. Trudeau (assistant en dermatologie à Sainte-Justine), J.-C. Doucet (assistant universitaire en anesthésie à Notre-Dame), J.-F. Houle et R. Laurendeau (assistants hospitaliers en anesthésie à Notre-Dame), Gilbert Brisebois (assistant au laboratoire de la Miséricorde), Moïse Clermont (assistant en anesthésie à la Misécorde), Azarie Cousineau et Hector Ricard (assistants en obstétrique à la Miséricorde).

JEAN SAUCIER

Le docteur Antonio Martel, professeur titulaire à la Faculté et médecin de l'Hôpital du St-Sacrement, vient d'être admis au rang des membres de la Société Américaine d'Encrinologie (American Association for the Study of Internal Secretions) lors du récent congrès, le 11 juin, à Atlantic City. Son admission fut demandée par les professeurs Selyé et Collip et obtenue par présentation de titres et de travaux d'encrinologie.

Prix Casgrain-Charbonneau.—Depuis quelques années la Maison Casgrain-Charbonneau offre à la Faculté de Médecine de Laval un prix annuel par concours pour un travail original se rapportant à la médecine expérimentale. Ce prix est de cinq cents dollars et il peut être partagé suivant l'importance des travaux présentés.

Cette année le premier prix revient au docteur Louis-Paul Dugal, O.B.E., professeur titulaire de physiologie de l'acclimatation et chef adjoint de l'Institut d'Hygiène et de Biologie humaine à la Faculté de Médecine, pour ses recherches sur le rôle de l'acide ascorbique dans la défense contre le froid.

Le docteur Edouard Morin, F.R.C.P.[C.], professeur titulaire de bactériologie et chef des laboratoires de l'Hôpital du St-Sacrement, partage avec le Docteur Dugal le prix Casgrain-Charbonneau pour ses études expérimentales sur la pénicilline comme moyen de purification de la lymphe vaccinale.

Le professeur Roméo Blanchet.—L'Université d'Ottawa vient de décerner à notre professeur de physiologie, le docteur Roméo Blanchet, secrétaire de la Faculté et président du Comité permanent de la Survivance française en Amérique, un doctorat d'honneur en droit. Membre de l'Association des Physiologistes français, de la Société de Chimie biologique de Paris et de la Canadian Physiological Society, le docteur Blanchet fait depuis 1931 un enseignement fécond à la Faculté; ses occupations administratives et la rédaction du Laval Médical ne l'ont pas empêché d'occuper des fonctions sociales de la plus haute importance et c'est à ces nombreux titres que l'Université d'Ottawa lui attribue un honneur si bien mérité.

PIERRE JOBIN

General

Gifford Edmonds Prize in Ophtholmology.—The Prize of £100 awarded every two years is offered for the best essay on a subject dealing with Ophthalmology and involving original work, and is open to any British subject holding a medical qualification.

The subject for the next essay is: "The Pathology, Etiology and Clinical Course of Obstruction Occurring Within the Retinal Venous System".

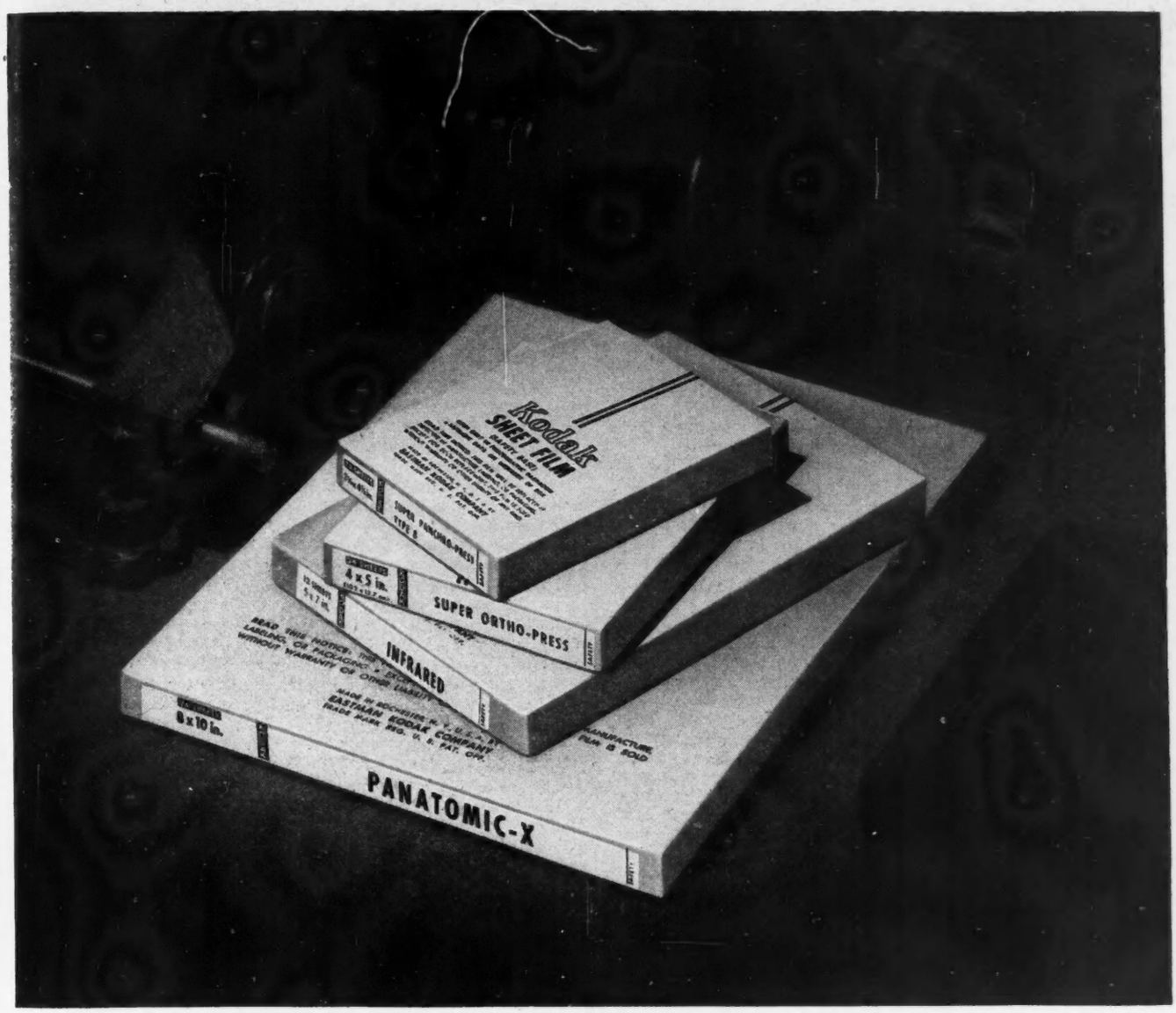
Preference will be given to original work based on any branch of the subject, rather than to compilations of the writings of previous observers. Essays must be sent in not later than December 31, 1948.

A leaflet giving full particulars of the prize may be obtained from the House Governor, Moorfields Westminster and Central Eye Hospital, City Road, London, E.C.1.

The class of Manitoba Meds, '23, met for the first time in 24 years on June 26, 1947, at the Fort Garry Hotel. The occasion was the C.M.A. Convention at Winnipeg. Of the original twenty graduates, the following were present: Drs. R. C. Bridge, Stan. Argue, R. Kerr Dewar, C. W. MacCharles, Harold Popham, Frank Walkin, H. Wright, and Ben Zivot. It was reported by Dr. Harold Popham that four members of the class had died, and the remainder were scattered from China to South America. Dr. R. K. Dewar was instructed to notify absent class members that the next re-union would be held on the occasion of the next succeeding annual convention of the C.M.A. when it is held in Winnipeg. Dr. Harold Popham was unanimously re-elected president of the class.

Health Studies of Eskimos.—A party of four scientists from Queen's University, Kingston, is going to Southampton Island early in August to begin studies of the food habits and the prevalence of various diseases among the Eskimos in that area.

The party will be headed by Dr. R. G. Sinclair, professor of biochemistry, and Dr. Malcolm Brown, associate professor of medicine, and is to include Dr. L. B. Cronk and G. C. Clark. They plan to remain about six weeks and to continue the investigation in successive years.



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Dr. Sinclair expects to leave early in July on the *R.M.S. Nascopie* and will make scientific observations in the remote settlements visited in the first half of the Eastern Arctic Patrol. Other members of the party will be flown to their destination. The doctors in the group will provide general medical services for the Eskimos during their stay.

The purpose of the study is to collect information on the incidence of various diseases among the Eskimos both in their native surroundings and in areas near trading posts. This data will be useful, it is believed, in determining the Eskimos' special needs which must be met if they are to be supported eventually on white men's supplies. The general nutritional status of the Eskimo will be scientifically investigated and particular attention will be given to ketonæmia.

Queen's Univeristy is being assisted by various government departments in arranging the expedition. The medical research division of the National Research Council and the Indian health services division of the Department of National Health and Welfare are helping to meet the cost of scientific apparatus and other expenses. The Department of National Defence, the Department of Transport and the Bureau of the Yukon and Northwest Territories are co-operating in the provision of transportation by sea and air and the loan of equipment and buildings.

Higher pay for medical and dental officers of the Canadian armed forces, in the form of a "responsibility allowance" of $60 per month over and above prevailing rates of pay and allowances, has been authorized by order of the Governor-General-in-Council. The new allowance is designed to attract more young medical and dental graduates to the Services. It will be applicable to all such officers up to and including the rank of Surgeon-Captain in the Navy and equivalent rank in the other two Services: Colonel in the Army and Group Captain in the Air Force. The policy of the Armed Forces now is to grant the initial rank of Surgeon Lieutenant, Captain or Flight Lieutenant, as the case may be, to all medical and dental officers on first appointment. The only stipulation is that they must be licensed practitioners in any one of the provinces of Canada, with at least one year's postgraduate experience.

The new allowance will largely offset the heavy costs of education the student of medicine and dentistry has incurred while earning his degree. It is hoped that more young men in these two professional fields will now consider a career in the Armed Forces as being at least equally attractive and offering as much scope for their talents and abilities as civilian practice.

The 1949 International Congress for Rheumatic Diseases.—There was to have been held in the United States during 1940 a Congress of La Ligue Internationale Contre le Rhumatisme which provided for meetings in New York, Philadelphia and Boston. This Congress was interrupted by the War.

It is now clear, since termination of the war, that efforts are being made in many of the countries of Europe toward resumption of progressive and large scale activities in the field of rheumatic diseases, notwithstanding the many existing handicaps. Increasing numbers of groups in the various countries of Europe, in the United States and Canada, are avowedly desirous of meeting each other and exchanging ideas. At this stage in the development of international cooperation, it seems of the highest importance that the medical profession, representing one of the major fields of science, lend to the situation under discussion everything within its power in order to bring together fellow workers in the same field with the aim of enabling them to know each other better, exchange ideas, and build further toward that ideal of international understanding fundamental to any permanent peace.

The American Rheumatism Association therefore through its appointed representatives and pursuant to the interrupted plan for 1940, officially announces to all members of La Ligue Internationale Contre le Rhumatisme its desire and intention to sponsor an International Congress for Rheumatic Diseases in the United States in the year 1949, the exact time and place to be determined later but to be approximately contemporaneous with the annual convention of the American Medical Association. To all interested, the Association extends a most cordial invitation. As arrangements develop, appropriate additional announcements will be forthcoming.

BOOK REVIEWS

History of the American Medical Association. M. Fishbein, Editor, *American Medical Association Journal.* 1,242 pp., illust. $11.50. W. B. Saunders Company, Philadelphia and London; McAinsh & Company Limited, Toronto, 1947.

The preparation of this book is in the nature of a *tour de force.* It is apparent from the Preface that the actual writing of it was carried out in a very short time—short so far as the writing of history is concerned—and with an inexorable time limit in the shape of the centennial meeting of the American Medical Association. This pressure of events is clearly reflected in the book. It actually is a great storehouse of material. Time has not permitted of its digestion. But what a storehouse! Several writers have contributed material, but the guiding, and chiefly contributing, hand of Dr. Morris Fishbein, is evident throughout. His genius for organization makes the book very easy of consultation. It may not be that many will read it through, but as a source book it must remain unexcelled.

Like the growth of all national bodies the American Medical Association illustrates the stages of struggle which had to be passed through before its steady orderly progress was assured. The figure of Dr. Nathan Smith Davis as its founder stands out as an extraordinary personality. At the age of 80 he attended the fiftieth meeting of the Association: he had only missed three meetings in those 50 years, and it was not merely steady attendance. He had taken part in every aspect of organized medicine, and had also maintained his place as a leader in his professional work. In an organization involving the service of so many of the best type of medical men, it is not always easy to single out one above the rest. But Dr. Davis' career places him by himself.

The picture one gains is of an organization to which many men have devoted their best energies towards the highest ends in medicine. Much of this work especially in the early years was gratuitous, and still is. Mistakes, peculiarities, humour, dullness, magniloquence, determination to uphold high ideals—all these pass before us in these pages. If one tires of organization one can turn to the chapter on libel suits and the story of John R. Brinkley "the greatest charlatan in medical history". There are degrees of greatness apparently amongst the most unsavoury figures. At any rate the story of this particular gentleman has all the colour that one associates with the exploits of the Borgias. But where they slew their hundreds Brinkley must have been directly and indirectly responsible for the suffering and death of thousands.

The growth of every limb of the Association tree is described. It is good to have this birdseye view of such a complex body, and better still to be able to look through a lens which presents so much detail so clearly and authoritatively.

Whither Medicine from Dogma to Science? A. Fidler, Dozent (Associate Professor) of Medicine of the University of Warsaw. Senior Lecturer in Medicine, Polish School of Medicine, Edinburgh. 126 pp. 6/-. Thomas Nelson & Sons Ltd., Edinburgh, 1946.

The author of this book challenges the present system of approach to medical research and problems, or,

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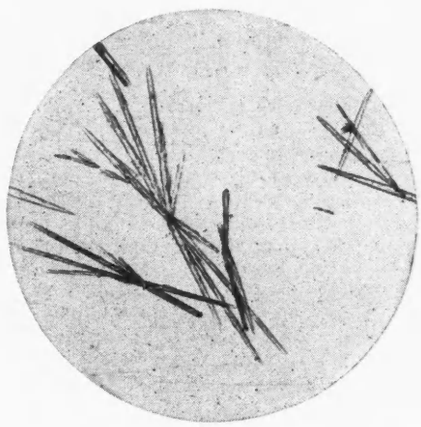

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as he says, the "orthodox" system, in a series of well-reasoned arguments. He avers that the present or orthodox system is interested only in the "cause" of disease and its removal, and states that this is basically not scientific. In its place is offered the "medicine of probability", in which lengthy statistical surveys will give experimental truths. "The orthodox scheme admits only one factor (cause), and having no time for heretics, sees no need to check up on its assertion. The medicine of probability, on the other hand, does not proclaim supreme and final truths; its truths are experimental ones, and for that reason it strives to provide a method yielding reliable results which in conjunction with this method form the system of the medicine of probability".

This book is worthy of the consideration of those interested in statistical methods.

Uterotubal Insufflation. I. C. Rubin, Clinical Professor of Gynæcology, College of Physicians and Surgeons, Columbia University. 453 pp., illust. $11.00. McAinsh & Co. Limited, Toronto, 1947.

A book on this subject from the pen of an acknowledged master demands attention. The title does not do full justice to the scope of the work which includes two interesting chapters on the physiology of the Fallopian tubes and the relation of ovarian function to the physiology. The tubes are described as actively functioning organs with peristaltic waves and contractions affected by the particular phase of the menstrual cycle. Much information has been gained by the use of the kymograph.

Dr. Rubin's investigation into the possibility of passing x-ray opaque substances through the uterine cavity and tubes into the peritoneal cavity began in 1914 and continues to the present day. Though he began with the use of collargol, he soon abandoned it and in 1919 he made the first uterotubal insufflation with oxygen. Later CO_2 was substituted. Though he feels strongly that uterotubal insufflation with gas is preferable to the injection of lipiodol and other x-ray opaque substances, he gives a detailed description of both techniques. He makes a good case for the value of uterotubal insufflation, not only as a means of determining the patency or otherwise of the tubes, and so a measure of prime importance in the study of sterility, but as a therapeutic agent in sterility and dysmenorrhœa.

Biological Symposia. Volume XII. Edited by Jaques Cattell. Estimation of the Vitamins, edited by W. J. Dann, School of Medicine, Duke University; and G. H. Satterfield, North Carolina State College of Agriculture and Engineering of the University of North Carolina. 531 pp., illust. $6.50. The Jaques Cattell Press, Lancaster, Pa.; The Ronald Press Co., New York, 1947.

This, the latest and largest of the Biological Symposia under the general editorship of Jaques Cattell, is likely to be the most widely used, as it competently fills a real gap in scientific literature. The general plan emerges in the first fifty pages, devoted to vitamin A, which are divided into three chapters: one on methods of biological assay, one on chemical determination of vitamin A by colorimetric methods of ultra-violet spectroscopy, and one on chemical determination of carotene. In each chapter the assigned contributor gives a critical review of the various methods that have been proposed, and then describes one recommended procedure with all technical details. The cautious biochemist would probably turn back to the original papers before trying to use one of these recommended procedures, but at least the accounts given here are full enough to show him what apparatus and facilities will be required and what difficulties are likely to be encountered.

This general plan is followed, though not rigidly, throughout. Later chapters continue down the vitamin alphabet to E and K, and even such minor members of the B complex as inositol and choline are discussed, the emphasis here being on microbiological methods. There are in all 29 chapters, and their authors are recognized authorities; moreover, the editors have clearly laboured to ensure balance and harmony throughout, though there is a curious lack of emphasis on statistical procedures until the later sections are reached. The book is not free from misprints, of which the oddest is a reference to guinea-pigs weighing "2-3" grams (page 378; it should be "203"), but on the whole it is very satisfactory in accuracy and in format. It will be invaluable to all those concerned with the measurement of vitamins in foods or in body fluids, but it should be emphasized that it is a collection of methods and makes no attempt to discuss the physiological properties of the vitamins, their distribution, or their clinical importance.

Urology in General Practice. N. F. Ockerblad, Professor of Clinical Urology, University of Kansas School of Medicine. 392 pp., illust., 2nd ed. $5.75. The Year Book Publishers, Chicago, 1947.

The virtues of this small text greatly outweigh its faults. It is of a convenient size, nicely printed and bound, on good paper, and most of its illustrations are satisfactory. It discusses its subject at a very satisfactory level for the general practitioner or the student. Included are a number of details of diagnosis and of treatment, which may be well known to the urologist, but the ignorance of which often handicaps the general practitioner. There are no lists of references, although a moderate number of names are mentioned in the text in connection with new developments in the field; the reviewer believes this a satisfactory arrangement for the purpose the book is intended.

Adverse criticism is limited to a small group of minor points. There are a few errors of fact, such as the statement about the pH of the phosphatases. The statistics regarding the incidence of ptosis were not understandable to the reviewer. Some of the illustrations are too "contrasty" to show best the lesion for which they are included, and other illustrations appear to have been included only because of the rarity of the condition.

American Hospital. E. H. L. Corwin, Executive Secretary, Committee on Public Health Relations, The New York Academy of Medicine. 226 pp. $1.50. The Commonwealth Fund, New York, 1946.

This is one of the excellent series of books issued by the New York Academy's of Medicine's Committee on Medicine and the Changing Order, although its value to Canadian readers is somewhat diminished by the necessarily large portion of the book devoted to historical development and statistical material of purely American application. However, the author's analysis of the present situation and his suggestions as to probable future development are interesting and can be applied equally to the Canadian scene. He notes that, in contrast to the haphazard growth of hospitals (and the fact that even now the location of new institutions is determined more often by civic pride or political considerations rather than by a demonstrated need for hospital accommodation) there has developed over the years a system of standards and tests by which the performance of the individual hospital can be rated. He commends the work of the American College of Surgeons in its hospital standardization program, the American Medical Association and the various specialty boards in raising the standard of work done in hospitals. He urges care in the building of smaller hospitals, which are not likely to be so well equipped or staffed, but admits that they are an integral factor in the better distribution of medical care. He recommends more cost accounting studies and a wider use of pooled hospital statistics. He urges more accommodation for the chronically ill—a program which can only be undertaken with government assistance.

Although a valuable reference book for those familiar with the hospital field, the average medical reader might find that it presupposes a knowledge of present developments which he does not possess.

SUPPLEMENT

The Association

THE SEVENTY-EIGHTH ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION, HELD IN WINNIPEG,

June 23, 24, 25, 26, 27, 1947

THE Seventy-eighth Annual Meeting of the Canadian Medical Association was held in the Royal Alexandra Hotel, Winnipeg, on June 23, 24, 25, 26 and 27, 1947. The registration included 1,183 doctors and 333 ladies, making a total attendance of 1,516.

The Annual General Meeting

The Annual General Meeting was held on Wednesday evening, June 25. On this occasion, senior membership was conferred upon the following:

Drs. Robert Washington Irving, Kamloops, B.C.
William John Simpson, Millet, Alberta
James McCrae Leask, Moose Jaw, Sask.
Sidney J. S. Peirce, Brandon, Manitoba
William Turnbull, Winnipeg, Manitoba
Malcolm H. V. Cameron, Toronto
Harry Percival Hudson, Aylmer, Que.
James A. Macnaughton, Moncton, N.B.
Leander Rupert Morse, Lawrencetown, N.S.

Dr. Wallace Wilson, of Vancouver, the retiring President, presented a brief valedictory address.

After his installation as President, Dr. F. G. McGuinness, of Winnipeg, gave his inaugural address.

The British Medical Association was represented at the meeting by Dr. John M. McMichael of London who delivered the Osler Lecture. Fraternal greetings from the American Medical Association were conveyed by the following official delegates: Dr. George F. Lull, Secretary and General Manager of the American Medical Association, Dr. William F. Braasch, Rochester, and Dr. Ernest E. Irons, Chicago.

The General Council

The General Council met on Monday and Tuesday, June 23 and 24, under the Chairmanship of Dr. Harris McPhedran, with 100 delegates present from the nine Divisions.

The following is a list of those who answered the roll call:

Drs. J. D. Adamson, Winnipeg
G. Harvey Agnew, Toronto
J. F. C. Anderson, Saskatoon, Sask.
A. E. Archer, Lamont, Alta.
B. C. Armstrong, Medicine Hat, Alta.
Fred Auld, Nelson, B.C.
W. W. Bartlett, Brampton, Ont.
P. E. Belliveau, Meteghan, N.S.
E. F. E. Black, Winnipeg
William Boyd, Toronto
W. Bramley-Moore, Edmonton
H. E. Britton, Moncton, N.B.
J. L. Brown, Regina, Sask.
W. E. Bryant, Kirkland Lake, Ont.
Jean Bouchard, Montreal
G. D. W. Cameron, Ottawa, Ont.
J. E. Carson, Brantford, Ont.
O. E. Caza, Valleyfield, Que.
F. H. Coppock, Eckville, Alta.
C. E. Corrigan, Winnipeg
H. D. Dalgleish, Saskatoon, Sask.
J. S. Delahaye, Kingston, Ont.
H. K. Detweiler, Toronto
C. J. Devins, Aurora, Ont.
H. S. Dunham, Toronto
J. M. Elliott, Quebec, Que.
H. S. Evans, Brandon, Man.
Gordon S. Fahrni, Winnipeg
R. F. Farquharson, Toronto
G. Gordon Ferguson, Saskatoon, Sask.
W. S. Fitzpatrick, Moncton, N.B.
C. A. Gauthier, Quebec
Léon Gérin-Lajoie, Montreal
N. H. Gosse, Halifax
H. G. Grant, Halifax
W. G. Gray, Sarnia, Ont.
G. E. Hall, London, Ont.
G. W. Halpenny, Montreal
R. I. Harris, Toronto
M. C. Harvey, Kitchener, Ont.
W. P. Hogarth, Fort William, Ont.
A. Hollenberg, Winnipeg
C. J. Houston, Yorkton, Sask.
R. K. Johnston, Eston, Sask.
W. V. Johnston, Lucknow, Ont.
A. D. Kelly, Toronto
H. W. Kerfoot, Smiths Falls, Ont.
J. D. Kinsman, Ottawa
L. H. Leeson, Vancouver
R. Lessard, Quebec
D. Sclater Lewis, Montreal
W. A. Lincoln, Calgary
J. G. B. Lynch, Sydney, N.S.
E. K. Lyon, Leamington, Ont.
William Magner, Toronto
R. H. Malyon, Toronto
J. R. Martin, Neepawa, Man.
G. O. Matthews, Vancouver, B.C.
A. H. Meneely, Nanaimo, B.C.
H. H. Milburn, Vancouver
E. S. Mills, Montreal
E. A. McCusker, Regina, Sask.
H. E. MacDermot, Montreal
M. T. Macfarland, Winnipeg
F. G. McGuinness, Winnipeg
J. A. McMillan, Charlottetown
P. H. McNulty, Winnipeg
Harris McPhedran, Toronto
A. B. Nash, Victoria
Miss Sylvia Onesti, Montreal
Drs. Harold Orr, Edmonton
Frank S. Patch, Montreal
W. S. Peters, Brandon, Man.

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Walter Scriver, Montreal
Geo. Skinner, Saint John
G. F. Strong, Vancouver
J. C. Thomas, Vancouver
S. R. Townsend, Montreal
Ethlyn Trapp, Vancouver
J. R. Vant, Edmonton
A. F. VanWart, Fredericton, N.B.
Vance Ward, Montreal
Mr. William Wedlock, Kingston, Ont.
Drs. F. E. Werthenbach, Unity, Sask.
C. C. White, Chatham, Ont.
George White, Saint John
Lorne Whitaker, St. Catharines, Ont.
F. L. Whitehead, Vancouver
A. B. Whytock, Niagara Falls, Ont.
A. E. Wilson, Calgary
Wallace Wilson, Vancouver
H. G. Young, Moose Jaw, Sask.
Morley Young, Lamont, Alberta

REPORT OF THE COMMITTEE ON ARCHIVES

Mr. Chairman and Members of General Council:—

1. Your Committee reports with deep regret the loss of the following members by death during the past year:

Allen, J. A. L., Lethbridge, Alta.
Anderson, H. B., Toronto (Senior Member)
Archibald, M. G., Kamloops, B.C.
Baribeau, C., Trois Rivières, Que.
Bayly, B. M., Moose Jaw, Sask.
Beasley, W. J., Windsor, Ont.
Becker, R. P., London, Ont.
Bermak, C. J., Winnipeg
Binns, E. E., Welland, Ont.
Boucher, R. B., Vancouver (Senior Member)
Boucher, S., Montreal (Senior Member)
Bourne, C. R., Montreal
Broad, R. S., Edmonton
Brynildsen, R. K., Vancouver
Byers, D. P., Schreiber, Ont.
Callahan, T. H., Toronto
Campbell, C. A., St. Thomas, Ont.
Carmichael, A., Bawlf, Alta.
Carmichael, M. A., Regina
Charman, F. D., Truro, N.S.
Clark, W. H., Portage la Prairie, Man.
Clarke, J. L., Didsbury, Alta.
Cleaver, E. E., Toronto
Coffyn, W. H., Bathurst, N.B.
Copeland, G. G., Toronto
Cote, Paul Emile, Quebec, Que.
Craig, K. L., Campbell River, B.C.
Crang, F. W., Edmonton
Curren, L. M., East Riverside, Kings Co., N.B.
Dorman, O. C., Winnipeg
Duggan, C. E., St. David's, Ont.
Duncan, J. H., Saskatoon
Duncan, J. H., Sault Ste. Marie, Ont.
Elliott, W. J., Brandon, Man.
Farncomb, T. S., Trenton, Ont.
Fife. J. K., Edmonton
Finn, J. J., Dundurn, Sask.
Finnie, J. H., St. Hilaire, Que.
Folger, H. P., Kingston, Ont.
Forrest, R. F., Port Hope, Ont.
Gemmell, J., Assiniboia, Sask.
Graham, W. L., Vancouver
Grant, J. F., Victoria
Gravel, M., Rockglen, Sask.
Greene, D. Y., Windsor, Ont.
Hamilton, T. A., Brinston, Ont.
Hamilton, T. W., Fort Qu'Appelle, Sask.
Hardisty, R. H. M., Montreal
Hewitt, S. R. D., Aurora, Ont.
Houston, J. C., Charlottetown
Irwin, H., Bonfield, Ont.
Jamieson, Alison, London, Ont.
Johnston, S., Toronto
Jones, H. A., Victoria
Kelly, E. P., Oshawa, Ont.
Kelly, J. M., Delta, Ont.
Kennedy, A. E., Stettler, Alta.
Keys, M. J., Victoria
Kydd, A. E., Michel, B.C.
Lane, Robert T., Sault Ste. Marie, Ont.
Laurier, Y., Montreal
Leslie, N. V., Hamilton, Ont.
Lévêsque, Rivière-Bleue, Témiscouata, Que.
Lindsay, J. G. K., Saskatoon
Lupien, J. O., Pontex, Sask.
Malcolm, R. B., Chicago, Ill., late of Montreal
W. L. Mann, Winnipeg
Marr, D., Ridgetown, Ont.
Martin, A. B., Mount Stewart, P.E.I.
Martin, R. G., Calgary
Mason, E. G., Calgary
Mason, R. H., Westlock, Alta.
Medd, A. E., Winnipegosis, Man.
Moody, A. W., Winnipeg
Mooney, W. C., Vancouver
Morris, S. C. W., Calgary
Munroe, Hon. H. E., Regina
Munro, J. M., Odessa, Ont.
Murray, K. I., Lethbridge, Alta.
Musgrove, W. W., Winnipeg
MacCarthy, G. S., Ottawa

MacDonald, B. W., Ottawa
MacDonald, W. M., Saint John, N.B.
McEachern, I. W. T., Edmonton
McEwen, S. C., New Westminster, B.C.
McFadden, H. M., Thorndale, Ont.
McGuire, W. C., Hamilton, Ont.
Maclean, N. J., Winnipeg (Senior Member)
McLean, W. T., Toronto
Macleod, M. G., Whycocomagh, N.S.
MacMahon, V. P., St. Catharines, Ont.
McNeill, G., London, Ont.
McPhedran, A. G., Toronto
McQueen, C. A. S., Amherst, N.S.
Pendergast, P., Montreal
Penny, W. G., Toronto
Prust, T. H., Peterborough, Ont.
Quesnel, P., Lac LaBiehe, Alta.
Quinlan, P. F., Stratford, Ont.
Racicot, H. L., St. Jean, Que.
Roger, R. R., Regina
Rolleston, Sir Humphry, Surrey, England (Honorary Member)
Rolls, A. M., Toronto
Ross, V., Hamilton, Ont.
Rublee, O. E., Wilkie, Sask.
Rutherford, R. M., Hawkesbury, Ont.
Ryall, E. J., Somerset, Man.
Scatchard, Walter, Chase, B.C.
Scott, R. G., Wakaw, Sask. (Senior Member)
Shappert, J. L., Sudbury, Ont.
Sims, H. L., Ottawa
Smith, J. W. H., St. Thomas, Ont.
Snider, D. I., Kingsville, Ont.
St. Jacques, E., Outremont, Que.
Stevenson, W. J., London
Stewart, A. E., Toronto
Stewart, J. R., Toronto
Sullivan, E. V., Saint John, N.B.
Swancesky, V. F., Lethbridge, Alta.
Teed, J. F., Dorchester, N.B. (Senior Member)
Tees, F. J., Montreal
Turcot, C. E., Quebec
Tyerman, W. W., Milestone, Sask.
Upton, W. W., Calgary
Vesey, E. M., Hanley, Sask.
Wainwright, S. F. A., Fredericton, N.B. (Senior Member)
Wallace, N. C., Guelph, Ont.
Walton, R. A., Toronto
Weart, A. J., Trochu, Alta.
Williams, G. S., Winnipeg
Williamson, N. T., Montreal
Wilson, C. H., Bolton, Ont.
Winkler, W. N., Toronto
Woodbury, F. V., Halifax
Wylde, C. F., Montreal (Senior Member)

All of which is respectfully submitted.

H. E. MACDERMOT,
Chairman.

Approved.

REPORT OF THE EXECUTIVE COMMITTEE

Mr. Chairman and Members of General Council:—

Your Executive Committee presents the following report:

MEETINGS OF THE COMMITTEE

2. Four meetings of the Executive Committee have been held since the last Annual Meeting. Every Division was represented at each of the meetings.

ANNUAL MEETING—1946

3. The 77th Annual Meeting, the Victory Meeting, was held at Banff Springs Hotel, June 10 to 14, 1946. Although the meeting was actually held in the Province of Alberta, with the active co-operation of the Alberta Division, arrangements were carried out by committees of the British Columbia Division, our hosts on this memorable occasion. With a registration of 889 members and 568 ladies, the attendance was limited only by the available accommodation at Banff. It is a matter of great regret that many members who would otherwise have attended were unable to do so because accommodation was not sufficient to meet an unprecedented demand. The growth of our Association in membership has reached a point where the housing of members who plan to attend will continue to be a problem even when the annual meeting is held in the largest Canadian cities. In spite of this difficulty, the 1946 meeting at Banff will long be remembered by those who attended as an outstanding gathering. The thanks of the Association are due to our President, Dr. Wallace Wilson, and Mrs. Wilson, who, together with the active committees of the British Columbia Division, worked so hard to ensure its success.

ANNUAL MEETING—1947

4. As this report is being written, final arrangements for the 78th Annual Meeting in Winnipeg are being concluded. Our President-Elect, Dr. F. G. McGuinness, and Mrs. McGuinness, assisted by active committees of the Manitoba Division, have laid the ground work for what promises to be a successful meeting. Our Manitoba hosts have overlooked no feature to ensure that our stay in Winnipeg will be both profitable and enjoyable. They have worked and planned so that a successful meeting of the Association is assured. General Council will no doubt desire to record at this time its appreciation to all those who have worked to make this meeting a memorable one.

5. *The Osler Lecture.*—Acting upon the recommeddation of the Committee on Awards, Lectures and Scholarships, an invitation was extended to Professor John McMichael of the British Post Graduate Medical School, University of London, to deliver the Osler Lecture. Dr. McMichael has accepted the invitation and will speak in General Session on Wednesday morning, June 25th.

FUTURE ANNUAL MEETINGS

6. Plans have been made for the 79th Annual Meeting to be held in Toronto during the week of June 21st, 1948.

The projected schedule indicates that the 80th Annual meeting will be held in Saskatoon in 1949.

ANNUAL MEETINGS OF DIVISIONS

7. During his term of office, the President, Dr. Wallace Wilson, accompanied by Mrs. Wilson, has attended the Annual Meetings of all Provincial Divisions held during the year 1946-47. The following schedule indicates his journeyings, and also indicates the activity and vigour of our Provincial Divisions:

Saskatchewan Division—Saskatoon—Sept. 19, 20 21, 1946.

Manitoba Division—Winnipeg—Sept. 23 to 26, 1946.

New Brunswick Division, Saint John, Oct. 1 & 2, 1946.

Prince Edward Island Division, Charlottetown—Oct. 5, 1946.

Nova Scotia Division—Halifax—Oct. 7, 8, 9, 1946.

Quebec Division—Quebec—April 18 and 19, 1947.

Ontario Division—Toronto—May 12 to 16, 1947.

The meetings of the Alberta and British Columbia Divisions were held concurrently with the 77th Annual Meeting of the Association at Banff.

The following schedule of Divisional Meetings has been arranged for the autumn of 1947:

Saskatchewan Division—Regina—Sept, 8, 9, 10.

Alberta Division—Edmonton—Sept. 10, 11, 12.

British Columbia Division—Vancouver—Sept, 16 to 19.

New Brunswick Division—Moncton—Sept. 30 and Oct. 1.

Prince Edward Island Division—Charlottetown—Oct. 4.

Nova Scotia Division—Halifax—Oct. 6, 7, 8, 9, 10

Senior Members

8. In accordance with the provision of Chapter II, Section 3, of the By-Laws, the following Senior Members recommended by their Divisions were elected by your Executive Committee at its last regular meeting held in Ottawa on March 10th and 11th, 1947:

Dr. Robert Washington Irving, Kamloops, B.C.
Dr. William John Simpson, Millet, Alberta
Dr. James McCrae Leask, Moose Jaw, Sask.
Dr. Sidney J. S. Peirce, Brandon, Manitoba
Dr. William Turnbull, Winnipeg, Manitoba
Dr. Malcolm H. V. Cameron, Toronto, Ontario
Dr. Harry Percival Hudson, Aylmer, Quebec
Dr. James A. Macnaughton, Moncton, N.B.
Dr. Leander Rupert Morse, Lawrencetown, N.S.

These members have been invited to be present at the Annual General Meeting on the evening of Wednesday, June 25th, to receive their badges and certificates.

Membership

9. Membership in the Canadian Medical Association stands at a figure never previously attained. This is due in part to the policy adopted by this Association and its Provincial Divisions of offering, on a complimentary basis, membership to demobilized medical officers for the remainder of the year in which they resume civilian life and for the subsequent calendar year. It is our hope that these complimentary members will continue as sustaining members of the Association when their period of free membership has expired. It is gratifying to report that this hope is being realized. Your Executive Committee has decided that this arrangement for complimentary membership shall terminate on December 31, 1947.

10. The following is a comparative statement of membership for the year 1946-47:

Membership Statement

	1946			1947			
Province	*Paid*	*Complimentary*	*Total*	*Paid*	*Complimentary*	*Total*	*(Arrears)*
British Columbia	455	322	777	578	283	861	100
Alberta	487	154	641	490	234	724	...
Saskatchewan	379	150	529	456	112	568	7
Manitoba	398	210	608	359	209	568	103
Ontario	2,427	1,432	3,859	2,903	888	3,791	263
Quebec	801	309	1,110	785	460	1,245	106
New Brunswick	220	74	294	220	100	320	...
Nova Scotia	259	82	341	289	66	355	30
Prince Edward Island	45	7	52	47	3	50	13
	5,471	2,740	8,211	6,127	2,355	8,482	622

The Medical Care of Veterans

11. After prolonged negotiations with the Department of Veterans' Affairs, a Schedule of Fees applicable to the medical care of veterans under the Doctor of Choice Plan was issued to all members of the medical profession in October, 1946. The operation of the Doctor of Choice Plan has been facilitated by the work of Medical Advisory Committees appointed in all D.V.A. Districts. It is our understanding that the medical care of veterans under this scheme has proceeded with satisfaction to the patient, to the doctor and to the Department.

General Council expressed its appreciation of the co-operation existing between the Department of Veterans' Affairs and the Canadian Medical Association by passing the following resolution:

> That, whereas the Treatment Branch of the Department of Veterans' Affairs, under the direction of Dr. W. P. Warner, has set a high standard of professional treatment for returned armed forces personnel in its hospitals across Canada;
> and whereas this high standard has been made possible by the part-time employment of doctors under Circular Letters 1945-75 and 1945-76;
> and whereas, with these forms of employment, the best services possible can be obtained and that the doctors so employed are, in the centres where there are medical schools, drawn largely from the medical faculties;
> therefore, be it resolved that this Council heartily commends the high standards of professional services set by the Director General of Treatment Services, and strongly recommends that the employment of doctors under Circular Letters 1945-75 and 1945-76 be continued;
> and it is further moved that a copy of this resolution be forwarded to the Prime Minister of Canada, to the Minister of the Department of Veterans' Affairs and to the Director General of Treatment Services.

Care of Paraplegic Patients

The Department of Veterans' Affairs is now operating four Departmental Special Treatment Centres where much has been accomplished for the rehabilitation of paraplegic patients. As the number of veteran patients is now decreasing, the Department would be willing to treat a certain number of civilian paraplegic patients in these centres where no civilian treatment centres are available, provided General Council would approve of this policy. It was agreed by General Council that the plan set forth by the Department of Veterans' Affairs for the treatment of civilian paraplegic patients in D.V.A. Hospitals be approved provided there is no civilian centre available for such cases.

National Medical Advisory Committee

The Director General of Treatment Services, D.V.A., with the approval of the Minister, is setting up a National Medical Advisory Committee for the purpose of advising the Department with regard to postgraduate training, research work and treatment standards in general in D.V.A. hospitals in Canada, and invited the Canadian Medical Association to appoint its President each year as its official representative on this Committee. General Council approved of this action.

Rehabilitation of Medical Officers

12. In June, 1945, under P.C. 3999, The Department of Veterans' Affairs made a grant of $20,000.00 to the Canadian Medical Association to be used in a "counselling service to returned medical officers." Inasmuch as this service was carried on by the Divisions of the Association following the disbandment of the Canadian Medical Procurement and Assignment Board in 1946, it was not found necessary to utilize any of this grant, and on December 19, 1946, the Association returned the full amount to the Government.

C.A.M.S.I.

13. At the 77th Annual Meeting in Banff, two representatives of the Canadian Association of Medical Students and Internes attended the sessions of General Council as guests of this Association. At this session, Article IX of the Constitution was amended to provide for the inclusion of representatives of undergraduates in medicine and internes as fully accredited members of General Council. This action was officially reported to the 10th Annual Conference of the Canadian Association of Medical Students and Internes held in Montreal in November, 1946, and the hope was expressed that these junior members of our profession would interpret this as a gesture of good will designed to foster a closer affiliation between our respective organizations. The governing body of CAMSI expressed appreciation of the action of the Canadian Medical Association and decided to accept the opportunity of sending two accredited delegates to General Council.

The Constitution of CAMSI was amended to provide for affiliation with the Canadian Medical Association and to include a representative of this Association on the National Executive of CAMSI. Your Executive Committee has appointed Dr. J. S. Delahaye of Kingston to act in this capacity for the current year.

The Physicians' Formulary

14. The production of the Physicians' Formulary has been completed under the auspices of the Committee on Pharmacy and the following distribution has been made:

Free copies to members of the C.M.A.....	7,276
Sales by the Publisher to pharmacists and others.....	1,240

The Physicans' Formulary has been adopted by the Department of Veterans' Affairs for use under the Doctor of Choice Plan, and we have reason to believe that it is being used widely in private practice. Its use should do much to simplify, standardize and rationalize therapy by drugs and other pharmaceuticals.

Complimentary copies of the Formulary will be sent to all senior students in medicine in Canada.

Income Tax Deductions

15. An interview was arranged with the Minister of National Revenue when the following points were discussed:

16. (a) The deduction of expenses involved in attendance at postgraduate courses and scientific meetings, including those of the Association and its Provincial Divisions.

The argument was advanced that post-graduate instruction in medicine is essential for Doctors in order to maintain a high degree of efficiency. It was requested that the Minister interpret the existing provisions of the Income War Tax Act to permit a claim for deduction of expenses incurred in obtaining post-graduate instruction as "disbursements wholly, exclusively and necessarily laid out or expended for the purpose of earning the income." The Minister maintained that the implementation of our suggestion would require an amendment to the Income War Tax Act, and promised to discuss the matter with the Minister of Finance.

17. (b) Exemptions for Salaried Physicians—
(1) Expenses incurred in refresher training; and
(2) Fees to governing bodies and medical associations.

We received assurance that doctors on salary would be allowed the same consideration in this respect as now pertains with respect to private practitioners.

18. (c) The raising of the ceiling on depreciation of motor cars.

The Minister advised us that, effective January 1, 1947, depreciation would be allowed on the full cost of a motor car up to a maximum cost of $2,500.00.

19. (d) Representations were made that the alternative allowance of 4½ cents per mile for the operation of a motor car in medical practice was inadequate.

This point was conceded and we were authorized to state that, effective January 1, 1947, doctors may claim 6 cents per mile for the operation of a car in the performance of their professional duties.

More recently the matter of postgraduate expenses has been thoroughly discussed with the Minister of Finance and the Minister of National Revenue. We were unable to receive assurance that any legislation favourable to our contention would be passed at the current session of Parliament, but a complete revision of the Income War Tax Act is being undertaken, and it is hoped that an amendment permitting the deduction of postgraduate expenses will be incorporated.

It was agreed that the following resolution be forwarded to the Income Tax Department:

1. *Re Expenses of Postgraduate Courses*:
That registered physicians be permitted to deduct for income tax purposes, expenses of postgraduate refresher training on the following basis:
Expenses of attending regularly constituted scientific meetings of—
(1) The Canadian Medical Association.
(2) The Provincial Divisions.
(3) Special Medical Societies and Associations in Canada and the United States (one per annum).
Provided that the doctor claiming deductions has actually been away from his own community for 24 hours or more, he will be permitted to claim:
(*a*) Return first class railway fare and lower berth or motor car expenses at six cents per mile each way.
(*b*) Maintenance at the rate of $10.00 per diem for every day of absence from his usual place of residence.
(*c*) Any registration or tuition fee required for attendance at the meeting.
Proof of claim to be sustained by a certificate of attendance issued by the organization sponsoring the meeting.

2. *Re Mileage Rate for Doctors' Cars*:
That the mileage allowance for the maintenance of doctors' cars be increased from 6 cents to between 8½ and 10 cents.

When the various proposals which are of interest to the medical profession have been disposed of by the Department, a memorandum will be issued jointly by the Commissioner of Income Tax and the Canadian Medical Association giving a complete summary of income tax information as applicable to medical practitioners.

Questionnaire on Doctors' Incomes

20. The Dominion Bureau of Statistics has been authorized to obtain from all groups of the population of Canada information as to income for purposes of the National Accounts. A survey of the economic status of Dentists has been made, and both the Bureau and the Canadian Dental Association appear to be quite satisfied with the information obtained from the survey. They are now anxious to have a similar questionnaire sent to members of the medical profession covering the years 1942 to 1946, inclusive, and it is proposed that a letter from the Canadian Medical Association be sent to every Doctor in Canada along with the questionnaire and letter from the Dominion Bureau of Statistics.

Your Executive Committee has given careful consideration to the request of the Bureau of Statistics for co-operation in this endeavour to determine the economic

status of members of the medical profession, and negotiations have taken place as to procedure to be adopted in the form of a questionnaire. The matter has also been studied by the Nucleus Committee on Economics, and the following recommendation was forwarded to your Executive Committee. "That the C.M.A. co-operate with the Dominion Bureau of Statistics in conducting a questionnaire survey relating to the incomes of the medical profession in Canada, the survey to be along similar lines to that conducted among the members of the Canadian Dental Association."

It has been pointed out to the Bureau of Statistics that a survey for the years 1942-46 might produce income figures which for many reasons could not be regarded as normal, but, since it is apparently the desire of the Government to seek information regarding the income of medical practitioners, your Executive Committee has indicated that the co-operation of the medical profession will be encouraged.

After further consideration of this matter, it was agreed that the C.M.A. co-operate in the survey as requested by the Bureau of Statistics; the returns to be sent to the Association Office, and the years covered to be 1939, 1945 and 1946.

Conference on Voluntary Prepaid Medical Services

21. There are a number of health service plans in operation throughout Canada at the present time, all of which are compiling valuable statistics which, if co-ordinated, would be of great service to any government or group interested in developing a satisfactory plan of Health Insurance. With this end in view, your Executive recommended to the Committee on Economics that arrangements be made to call together at a suitable time and place, representatives of the voluntary schemes for a conference on the costs and best methods of providing medical care to the people of Canada; and, further, that, in arranging such a conference ample time be taken for full correspondence between the Committee on Economics and the representatives of these schemes, so that the representatives might bring to the conference all facts and figures available which would be of value to the group in the study which is being undertaken.

This matter is dealt with further in the Report of the Committee on Economics.

Industrial Relations and Disputes Investigation Act, 1947

22. Early in the year a draft Bill called The Industrial Relations and Disputes Investigation Act was developed in the Department of Labour. Two clauses of the original draft are of particular interest to the medical profession:

(1) The definition of the term "Employee":

"Employee" means a person employed by an employer to do skilled or unskilled manual, clerical, technical or professional work, but does not include (1) a person employed in a confidential capacity or having authority to employ or discharge employees; or (2) a person employed in domestic service, agriculture, horticulture, hunting or trapping.

(2) The section referring to craft unions, which reads as follows:

(1) Where the majority of a group of employees of an employer who belong to a craft or profession by reason of which they are distinguishable from the employees as a whole, are separately organized into one trade union pertaining to the craft or profession, if the group is otherwise appropriate as a unit for collective bargaining, the trade union may apply to the Board and shall be entitled to be certified as the bargaining agent of the employees in the group.

(ii) The employees in a unit in respect of whom a trade union is entitled to be certified as bargaining agent under this section, shall, if the trade union so claims, be excluded from any other unit for collective bargaining and shall not be taken into account as members of any such other unit for any purpose of this Act.

In Toronto, the Municipal Employees Union was recognized as the bargaining agent for all employees of the city. Included in that group are some 14 doctors who were obliged by the terms of their employment with the city to become members of the union.

23. Your Executive Committee was unanimously of the opinion that we should seek an amendment to the Act which would have the effect of excluding physicians from membership in labour unions by amending the interpretation of "employee" and that legal advice should be sought as to the best method of achieving this.

24. On the advise of our solicitor, an approach was made to the Department of Labour, requesting that the terms of the draft Industrial Relations and Disputes Investigation Act 1947 be amended to exclude members of the medical profession and that it be specifically set forth as follows:

(i) "Employee" means a person employed to do any work for hire or reward but does not include

(a) a person who in the course of his duties receives confidential information concerning his employer's policies or practices respecting the relations between the employer and employees;

(b) a manager or superintendent or other person who represents an employer in his relation with his employees;

(c) a person employed in household service, agriculture, horticulture, hunting or trapping: or

(d) ***registered practitioners of medicine.***

Where the majority of a group of employees of an employer who belong to a craft or group exercising technical or scientific skills, ***other than physicians or surgeons,*** by reason of which they are distinguishable from employees as a whole. . . . . .

Your Executive Committee has received assurance that these recommendations will receive careful consideration.

The World Health Organization

25. At its annual meeting in 1946, General Council approved acceptance of an invitation which the Department of External Affairs of the Government of Canada had extended to your General Secretary to act as a medical adviser to the Canadian delegation appointed to attend an International Health Conference in New York, commencing June 18, 1946. This conference was convened by the United Nations and attended by representatives from 62 nations.

At the conclusion of five weeks' deliberation, a resolution was adopted, by unanimous vote of the delegates, approving a constitution for the World Health Organization. An Interim Commission of eighteen persons representing eighteen nations (of which Canada is one) was appointed to carry out the duties entailed in completing the organization. On the invitation of the Honourable Minister of National Health and Welfare, your General Secretary has acted as the Canadian delegate to two sessions of the Commission and as alternate delegate to the Deputy Minister of National Health and Welfare at the third session.

The first World Health Assembly is to be held within six months from the time twenty-six nations have ratified the constitution. With approximately one-half of these ratifications now in hand, it is expected that the World Health Organization will hold its first meeting towards the end of the year or early in 1948.

It is the opinion of your Executive Committee that the Canadian Medical Association was honoured in being invited by the Government of Canada to participate in the organization of this body.

The Commission will hold its fourth meeting in Geneva during the first two weeks of September. Dr.

Léon Gérin-Lajoie and the General Secretary have been invited to act as delegates to the Commission, representing the Government of Canada. General Council approved acceptance of the invitation.

The World Medical Association

26. Prior to the last annual meeting of General Council, your Executive Committee received an invitation from the British Medical Association to send a representative to an international medical conference in London in September, 1946. It was intimated that similar invitations were being sent to all national medical associations, the purpose of the conference being to consider the advisability of establishing a structure which would represent all the medical associations of the world. The invitation was accepted by General Council and the General Secretary was instructed to attend.

27. The conference which was held during the week of September 25th, 1946, was attended by representatives from thirty-two national medical associations. At the conclusion of three days' deliberation, it was unanimously agreed to recommend the establishment of a World Medical Association with the following objects:

1. To promote closer ties among the national medical organizations and among the doctors of the world by personal contact and all other means available.
2. To maintain the honour and protect the interests of the medical profession.
3. To study and report on the professional problems which confront the medical profession in the different countries.
4. To organize an exchange of information on matters of interest to the medical profession.
5. To establish relations with, and to present the views of the medical profession to the World Health Organization. United Nations Educational, Scientific and Cultural Organization, and other appropriate bodies.
6. To assist all peoples of the world to attain the highest possible level of health.

28. An Organizing Committee was appointed to prepare the Constitution and By-Laws and to arrange for the first meeting of the Association. The personnel of the Committee is as follows:

Dr. L. H. Bauer and
Dr. E. L. Henderson—United States of America
Dr. F. Decourt—France
Dr. P. Glorieux, Belgium
Dr. D. Knutson—Sweden
Dr. O. Leuch—Switzerland
Dr. J. A. Pridham—Great Britain
Dr. I. Shawki Bey—Egypt
Dr. L. G. Tornel—Spain
Dr. A. Zahor—Czechoslovakia
Dr. T. C. Routley—Canada (*Chairman*)
Dr. P. Cibrie —France } *Joint Secretaries*
Dr. Chas. Hill—Great Britain }

29. The Committee has held three meetings—two in London and one in Paris. A Constitution and By-Laws have been drafted and arrangements have been completed for the World Medical Association to hold its first plenary session in Paris on September 17, 18, 19 and 20, 1947. At the March, 1947, meeting of the Executive Committee in Ottawa, Dr. Wallace Wilson, President, Dr. Léon Gérin-Lajoie, immediate Past President, and Dr. T. C. Routley, General Secretary, were named as delegates from the Canadian Medical Association. It is the opinion of your Executive Committee that the World Medical Association can be a useful body, representing, as it hopes to do, the medical profession throughout the world. Your committee hopes that General Council and the medical profession of Canada as a whole will heartily approve of the Canadian Medical Association taking an active part in the World Medical Association.

Note. Dr. Donald Cameron, Deputy Minister of National Health for Canada was appointed a delegate by General Council; thus filling the four seats to which the C.M.A. is entitled at the Conference.

30. Herewith is a list of the Founder Associations:

Australia—Federal Council of B.M.A. Branches
Austria—Wirschaftliche Organisation der Aerzte
Belgium—La Federation Medicale Belge
Bulgaria—Union de Medecins de Bulgarie
Canada—Canadian Medical Association
Czechoslovakia—Ustredni Jednota Ceskych Lekaru
Denmark—Den Almindelige Danske Laegeforening
Egypt—Royal Egyptian Medical Association
Eire—Irish Free State Medical Union
Finland—Finnish Medical Association
France—La Confederation des Syndicats Medicaux Francais
Great Britain—British Medical Association
Greece—Athens Medical Association
Hungary—Magyar Orvosok Szabad Szakszervezete
Iceland—Icelandic Medical Association
Iraq—Iraq Medical Society
Italy—Alto Commissariato Igiene e Sanita
Luxembourg—Syndicat des Medecins du Grand-Duche de Luxembourg
Netherlands — Nederlandsche Maatschappij Tot Beverdering der Geneeskunst
New Zealand—B.M.A. Branch
Norway—Den Norske Laegeforening
Palestine—Palestine Arab Medical Association
Palestine Jewish Medical Association
Persia—Kanoon Pezeshgan Iran
Peru—Academia Nacional de Medicine
Poland—Naczelna Izba Lekarska
Portugal—Ordem dos Medicos
South Africa—Medical Association of South Africa
Spain—General Council of Colleges of Spanish Doctors
Sweden—Sveriges Lakarforbund
Switzerland—Federation des Medecins Suisses
Turkey—Turkish Ministry of Health
United States of America—American Medical Association

The following resolution was passed by General Council:

> "That this General Council express its appreciation to the General Secretary for the honour brought to the medical profession of Canada and the Canadian Medical Association by his participation in the World Health Organization and the World Medical Association."

Conclusion

31. Once again your committee desires to record its appreciation of the valuable services rendered by the various committees and individual members who have given so freely of their time during the year.

All of which is respectfully submitted.

J. HARRIS McPHEDRAN,
Chairman.

T. C. ROUTLEY,
General Secretary.

Approved.

REPORT OF SPECIAL NEGOTIATING COMMITTEE WITH D.V.A.

Mr. Chairman and Members of General Council:—

32. At our last annual meeting the report of the special committee to draw up a schedule of fees for the Department of Veterans' Affairs and to consider other matters related thereto, together with the supplementary report of the Special Negotiating Committee, were presented, discussed and approved.

On August 13th, 1946, we received a communication from Dr. W. P. Warner, Director General of Treatment Services, Department of Veterans' Affairs, stating that the Treasury Board had given approval to the revised schedule of fees.

Setting Up of Advisory Committees to D.V.A.

33. When this information was received, and according to our agreement with the Department of Veterans' Affairs, Advisory Committees were set up in each Province to act as advisers to the District Administrator of the Department. To date most of these committees have been called upon by the District Administrator for advice, although in some Provinces no meetings have been held.

Payment of Advisory Committees

34. Satisfactory arrangements have now been completed for the payment of Advisory Committees to the Department of Veterans' Affairs, all accounts having to be certified by the District Administrator of the Department of Veterans' Affairs before being sent to the C.M.A. office for payment.

The plan adopted is for all accounts to be paid by the Honorary Treasurer of the Canadian Medical Association, who will then be re-imbursed quarterly by the Department of Veterans' Affairs for the amounts expended.

Return of D.V.A. Grant for Counselling Service

35. In June, 1945, under P.C. 3999, the Department of Veterans' Affairs made a grant of $20,000.00 to the Canadian Medical Association to be used in a "Counselling Service to Returned Medical Officers". Inasmuch as this service was carried on by the respective Divisions on a voluntary basis, it was not found necessary to utilize any of the grant and therefore, on December 19th, 1946, the Association returned the full amount to the Government.

All of which is respectfully submitted.

F. G. McGUINNESS
Chairman.

Approved.

REPORT OF THE HONORARY TREASURER

Mr. Chairman and Members of General Council:—

36. I have the honour to present the report of the Honorary Treasurer for the year 1946. The certified financial statement, drawn up by our auditors, Messrs. McDonald, Currie and Company, Chartered Accountants, Montreal, is attached. The accounts of the Toronto office, as audited by Mr. Dignam, are incorporated in this statement.

Revenues

37. Our revenues for the year have increased to $139,971.46. The chief additions to our income have been an increase in membership fees of $5,913.87, and an increase in advertising revenues of $17,959.70.

Expenditures

38. Our expenditures have also risen to a marked degree. The appointment of the Assistant Secretary and the office rental are new items. An increase in the cost of printing the *Journal* ($13,912.17) and the production of the formulary ($4,552.99) have also added to the rising costs which now amount to a total of $131,787.69 for the year under review.

In spite of these increased expenses there is a surplus of $8,138.77 for the year.

Repayment of the Rehabilitation Grant

39. During the year, the government grant of $20,000.00 made in June, 1945, was returned to the Department of Veterans' Affairs. There had been no calls made on the fund, the counselling service having been provided by members of the Association on a voluntary basis.

Department of Hospital Service

40. The financial affairs of the department have been wound up and the account is now closed, except for the Blackader Library Fund which is still in our keeping. It is being used to pay for the upkeep of the Blackader Library, which has been loaned to the Canadian Hospital Council.

INVESTMENTS

General Funds

41. $5,000.00 Jewish General Hospital Campaign Committee 5 per cent bonds, purchased in 1934 at 99, were called for redemption at par on May 1st, 1946. On the advice of the Royal Trust Company, the proceeds, with the addition of $245.30 from current funds, were used to purchase $1,000.00 Dominion of Canada 7th Victory Loan $4,000.00 Dominion of Canada 9th Victory Loan.

TRUST FUNDS

The Osler Oration Fund

42. $400.00 Dominion of Canada 3 per cent 4th Victory Loan, due in 1957, was bought at 105.25 from the Blackader Lecture Fund with money from surplus revenues. These bonds were transferred to the capital account of the fund.

The Lister Club Fund

43. $1,000.00 par value of the invested revenues were transferred to the capital account of the fund.

The Osler Scholarship Fund

44. In accordance with directions of the Executive Committee, and with the approval of the Faculty of Medicine, McGill University, and of the Montreal General Hospital, who are the nominating bodies for the scholarships, $3,600.00 par value of the invested revenues were transferred to the capital account. This increases the book value of the investments in this fund to $16,542.49.

The Blackader Lecture Fund

45. Early in the year, $300.00 par value Dominion of Canada, 7th Victory Loan, was transferred from the invested revenues to the capital account of the fund. $400.00 par value Dominion of Canada, 4th Victory Loan, was sold at 105.25 to provide moneys for the Blackader Lecture. Owing to the unusually heavy expenses of the oration, a further grant of $300.00 was made by the Executive Committee from the Annual Meeting Account to assist the fund in meeting these charges.

All of which is respectfully submitted.

D. SCLATER LEWIS,
Honorary Treasurer.

46. STATEMENT No. 1.

BALANCE SHEET AS AT 31st DECEMBER, 1946

ASSETS

GENERAL FUNDS:			
Cash on Hand		$ 275.00	
Cash in Bank:			
Montreal	$21,769.98		
Toronto	36.36		
Annual Meeting	3,305.61		
		25,111.95	
			$25,386.95
ACCOUNTS RECEIVABLE:			
Advertising and *Journal* Sales	$2,428.65		
Reprints		349.62	
Special Reprints		333.60	
Deposit—Trans Canada Air Lines		425.00	
			3,536.87
INVESTMENTS:			
At Book Value, Schedule No. 1			146,008.97
Furniture and Equipment—			
Less Depreciation			2,880.46
			$177,813.25
TRUST FUNDS—Statement No. 4			41,008.45
SPECIAL GRANT FUNDS—Statement No. 5			15,097.63
			$233,919.33

LIABILITIES

GENERAL FUNDS:			
Revenue Received in Advance:			
Prepaid Membership, 1947		$ 1,601.00	
Prepaid Subscriptions, 1947		846.75	
			$ 2,447.75
SURPLUS ACCOUNT:			
Balance at Credit—			
31st December, 1945	$167,131.73		
Add: Profit on Sale of Investments		50.00	
Excess of Revenue over Expenditure for the Year		8,183.77	
			$175,365.50
			$177,813.25
TRUSTS			41,008.45
SPECIAL GRANTS			15,097.63
			$233,919 33

AUDITORS' REPORT

47. We have examined the books and accounts of the Canadian Medical Association for the year ended 31st December, 1946, and we have obtained all the information and explanations which we have required.

The receipts and disbursements of the General Secretary in Toronto, as shown on a statement certified to by Mr. J. H. Dignam as Auditor, have been incorporated in the books.

We report that, in our opinion, the above Balance Sheet and related Statement of Revenue and Expenditure are properly drawn up so as to exhibit a true and correct view of the state of the Association's affairs and the results of the operations for the year, according to the best of our information and the explanations given to us and as shown by the books.

(Signed) McDONALD, CURRIE & Co.,
Chartered Accountants.

Montreal, 13th February, 1947.

48. STATEMENT No. 2.

STATEMENT OF REVENUE AND EXPENDITURE FOR THE YEAR ENDED 31ST DECEMBER, 1946

REVENUE	
Membership Fees	$43,401.27
Subscriptions	8,326.98
Advertising	74,026.44
Sundry *Journal* Sales	441.72
Special Reprints	1,125.35
Annual Meeting—Statement No. 3	7,409.60
Transfer from Department of Hospital Service	683.34
Revenue from Investments and Bank Interest	4,556.76
	$139,971.46

EXPENDITURE		
Journal, Printing, etc.:		
Agent's Commissions	$ 8,255.08	
Printing	53,358.58	
		$61,613.66
Salaries:		
General Secretary's Office, Including Expense Allowance	$22,825.43	
Montreal Office—Editorial, including Honoraria to Divisional representatives and Honoraria for Abstracts and Special Contributions	15,821.54	
Unemployment Insurance	71.87	
		38,718.84
Travelling:		
Executive Committee	$ 6,690.16	
Transcontinental Tour—President and Assistant Secretary	792.88	
Post Graduate Teams	1,036.80	
Medical Secretaries	610.59	
General Secretary	446.83	
Nutrition Conference	53.45	
Department of Veterans' Affairs	304.25	
Miscellaneous	78.45	
		10,013.41
Medical Economics:		
Salaries	$5,000.00	
Travelling	3,075.80	
Sundries	97.79	
		8,173.59
Formulary:		
Salaries	$ 150.00	
Printing	4,255.64	
Postage	147.35	
		4,552.99
Administration Expenses:		
Audit Fees	$ 450.00	
Depreciation of Furniture and Fixtures	320.05	
Discount and Exchange	1,006.32	
General Expenses	1,141.23	
Office Supplies and Expense	339.77	
Rent	2,080.00	
Postage	1,496.46	
Royal Trust Company, Trustee Fees	180.38	
Stationery and Printing	849.00	
Telepone and Telegraph	851.99	
		8,715.20
Excess of Revenue over Expenditure for the Year		8,183.77
		$139,971.46

STATEMENT No. 3.

ANNUAL MEETING IN BANFF, JUNE, 1946, STATEMENT OF REVENUE AND EXPENDITURE

49. REVENUE		50. EXPENDITURE		
Exhibit Space	$15,322.60	Travelling Expenses	$1,098.56	
Bank Interest and Premium on United States Funds	277.65	Badges:		
		Past Presidents and Senior Members..	$306.25	
		Registration	176.12	
			482.37	
		Printing	1,935.75	
		Banff Springs Hotel	3,055.88	
		Rental of View Boxes and Lanterns, Operators' Wages	53.45	
		Telephone and Telegrams	178.25	
		Local Committee	750.00	
		Clerical Assistance	75.00	
		Blackader Lecture	300.00	
		Express and Cartage	185.60	
		Sundries	75.79	
				8,190.65
	$15,600.25	*Excess of Revenue over Expenditure*		$7,409.60

STATEMENT No. 4.

TRUST FUNDS—BALANCE SHEET AS AT 31ST DECEMBER, 1946

51. ASSETS	*Osler Oration Fund*	*Lister Club Fund*	*Osler Scholarship Fund*	*Blackader Lecture Fund*	*Frederick Newton Gisborne Starr Memorial Award*	*Blackader Library of the Hospital Service Department*	*Canadian Radiological Society Library Fund*	*Total*
Capital Assets:								
Cash in Bank	.....	.....	$ 25.92	$ 89.62	.....	.....	.....	$ 115.54
Investments	$6,471.53	$7,585.00	16,542.49	5,814.03	$1,000.00	.....	.....	37,413.05
	$6,471.53	$7,585.00	$16,568.41	$5,903.65	$1,000.00			$37,528.59
Revenue Assets:								
Cash in Bank	$920.16	$235.90	$1,015.06	$225.76	$74.45	$656.31	$152.22	$3,279.86
Investments	100.00	100.00	.....	.....	.....	.....	.....	200.00
	$1,020.16	$335.90	$1,015.06	$225.76	$74.45	$656.31	$152.22	$3,479.86
Total								$41,008.45
52. LIABILITIES								
Capital Funds:								
Balance, 31st December, 1945	$6,050.00	$6,585.00	$12,968.41	$5,529.17	$1,000.00	.....	.....	$32,132.58
Amount transferred from Revenue Funds	421.53	1,000.00	3,600.00	374.48	.....	.....	.....	5,396.01
	$6,471.53	$7,585.00	$16,568.41	$5,903.65	$1,000.00			$37,528.59
Revenue Funds:								
Accounts Payable	.....	.....	.....	.....	$ .60	.....	.....	$ .60
Accumulated Revenue:—								
Balance—31st December, 1945	$1,273.40	$1,098.87	$4,136.52	$1,160.72	44.47	$751.03	$172.66	8,637.67
Excess or *Deficiency* of Revenue for the Year	168.29	237.03	478.54	*560.48*	29.38	*94.72*	*20.44*	237.60
	$1,441.69	$1,335.90	$4,615.06	$600.24	$73.85	$656.31	$152.22	$8,875.27
Deduct: Amount transferred to Capital Funds	421.53	1,000.00	3,600.00	374.48	.....	.....	.....	5,396.01
Balance—31st December, 1946	$1,020.16	$335.90	$1,015.06	$225.76	$73.85	$656.31	$152.22	$3,479.26
	$1,020.16	$335.90	$1,015.06	$225.76	$74.45	$656.31	$152.22	$3,479.86
Total								$41,008.45

STATEMENT No. 5

SPECIAL GRANT FUNDS—BALANCE SHEET AS AT 31ST DECEMBER, 1946

53. ASSETS	*Department of Hospital Service*	*Department of Publicity and Health Education*	*Cancer Fund*	*Committee on Nutrition*	*Rehabilitation Fund for Medical Officers*	*Total*
Cash in Bank	.....	$37.54	$1,319.83	$43.62	$1,595.64	$ 2,996.63
Investment in Dominion of Canada War Loan Bonds	.....	.....	12,100.00	.....	.....	12,100.00
Equipment less Depreciation	.....	1.00	.....	.....	.....	1.00
		$38.54	$13,419.83	$43.62	$1,595.64	$15,097.63
54. LIABILITIES						
Accounts Payable	.....	.....	$ .14	....	.....	$ .14
Special Grant Funds:						
Balance—31st December, 1945	$1,565.52	$1,012.89	$13,646.84	$43.40	$20,032.12	36,300.77
Excess or *Deficiency* of Revenue for the Year	*882.18*	*974.35*	*227.15*	.22	*18,436.48*	*20,519.94*
	$683.34	$38.54	$13,419.69	$43.62	$1,595.64	$15,780.83
Deduct: Transfer to General Fund	683.34	.....	.....	.....	.....	683.34
Balance—31st December, 1946	.....	$38.54	$13,419.69	$43.62	$1,595.64	$15,097.49
	.....	$38.54	$13,419.83	$43.62	$1,595.64	$15,097.63

SCHEDULE No. 1

SCHEDULE OF INVESTMENTS AS AT 31ST DECEMBER, 1946

55. GENERAL FUND

	Par Value	*Book Value*
Dominion of Canada 3/57	$21,000.00	$21,000.00
Dominion of Canada 3/59	10,000.00	10,000.00
Dominion of Canada 3/60	55,000.00	55,000.00
Dominion of Canada 3/62	10,000.00	10,050.06
Dominion of Canada 3/63	10,000.00	10,000.00
Dominion of Canada 3/66	12,000.00	12,195.24
City of Montreal 1956—4½/46—2½ thereafter	1,000.00	975.00
City of Montreal 1958—4½/47—3½ thereafter	2,000.00	1,856.20
City of Montreal 1970—5/54—3¾ thereafter	2,000.00	2,020.00
City of Montreal 1971—5/54—3¾ thereafter	3,000.00	3,030.00
Province of Nova Scotia 3/52	10,000.00	9,900.00
Province of Ontario 3/50	9,000.00	8,982.47
Ritz-Carlton Hotel Co. 1st Mortgage 2½/73 and $130.00 Non-Interest Bearing Certificates of Indebtedness	1,000.00	1,000.00
	$146,000.00	$146,008.97

Approximate Market Value $150,960 00

TRUST FUNDS

56. OSLER ORATION FUND:

CAPITAL

	Par Value	*Book Value*
Dominion of Canada 3/57	$ 500.00	$ 521.53
Dominion of Canada 3/60	2,600.00	2,600.00
Dominion of Canada 3/62	50.00	50.00
Dominion of Canada 3/66	3,300.00	3,300.00
	$6,450.00	$6,471.53

Approximate Market Value, $6,713.00.

REVENUE

Dominion of Canada 3/62	$100.00	$100.00

Approximate Market Value, $104.00

57. LISTER CLUB FUND:

CAPITAL

	Par Value	*Book Value*
Dominion of Canada 3/57	$ 800.00	$ 800.00
Dominion of Canada 3/60	5,500.00	5,500.00
Dominion of Canada 3/62	300.00	300.00
Province of Quebec 4½/63	1,000.00	985.00
	$7,600.00	$7,585.00

Approximate Market Value, $8,072.00

REVENUE

Dominion of Canada 3/62	$100.00	$100.00

Approximate Market Value, $104.00

58. OSLER SCHOLARSHIP FUND:

CAPITAL

Dominion of Canada 3/57	$ 900.00	$ 900.00
Dominion of Canada 3/58	2,000.00	1,992.49
Dominion of Canada 3/60	12,400.00	12,400.00
Dominion of Canada 3/62	550.00	550.00
Dominion of Canada 3/63	700.00	700.00
	$16,550.00	$16,542.49

Approximate Market Value, $17,221.00

59. BLACKADER LECTURE FUND:

Dominion of Canada 3/58	$3,000.00	$2,988.75
Dominion of Canada 3/60	700.00	700.00
Dominion of Canada 3/62	300.00	300.00
Dominion of Canada 4½/57	200.00	204.00
Province of Alberta 3½/73	1,000.00	1,000.30
City of Drummondville 4/56	500.00	517.50
City of Drummondville, 4/62	100.00	103.50
	$5,800.00	$5,814.03

Approximate Market Value, $6,032.00

60. FREDERICK NEWTON GISBORNE STARR MEMORIAL AWARD:

CAPITAL

	Par Value	*Book Value*
Dominion of Canada 3/59	$1,000.00	$1,000.00

Approximate Market Value, $1,040.00

SPECIAL GRANT FUNDS

61. CANCER FUND:

Dominion of Canada 3/60	$10,100.00	$10,100.00
Dominion of Canada 3/63	2,000.00	2,000.00
	$12,100.00	$12,100.00

Approximate Market Value, $12,584.00

Approved.

REPORT OF THE MANAGING EDITOR

Mr. Chairman and Members of General Council:—

62. I have pleasure in presenting the report of the Managing Editor for the year 1946.

There are two problems which confront the *Journal*. They are: first, the relation of the rising costs of producing the *Journal* to the revenue from advertising; and, secondly, the quality of the advertising material in the *Journal*.

Our costs of production have increased very considerably during the year. The actual printing charges were raised 25 per cent after June 30th last, making an increase of approximately 12.5 per cent for the year as a whole. In addition there was an increase of some 12 per cent in the number of *Journals* printed due to our supplying the *Journal* to returned medical officers. The net result of these two factors was an increase of approximately $14,000.00 in the cost of printing the *Journal* over that of the preceding year. For the same period our net advertising revenue increased $16,700.00.

63. A comparison of revenue and expenditure over the past few years shows that the expense of producing the *Journal* is increasing at a much greater rate than is the advertising revenue. This discrepancy will be much more evident in 1947 when the increased printing costs will be in force for the whole year and the distribution of the *Journal* to returned men will be at its peak. In addition we have been informed that there will be an increase of 12 per cent in the cost of paper dating back to the February issue of the *Journal*.

A part of the increased expenditure is being met by a further increase in our advertising rates but this increase will not apply to any considerable number of contracts until the end of 1947.

64. The quality of our advertising material has been the subject of constant study by your Board of Censors. We have offered certain suggestions to our advertisers which will make the advertisements more useful to our readers. These suggestions have been well received.

65. It has also been suggested that the privilege of exhibiting at the Annual Meeting should be confined to those who advertise in the *Journal*. This is an extension of our present policy that exhibits shall consist only of those products which have been approved for our advertising pages. This matter is being explored before further action is taken.

All of which is respectfully submitted.

D. SCLATER LEWIS,
Managing Editor.

Approved.

REPORT OF THE EDITOR

Mr. Chairman and Members of General Council:—

66. The volume of material handled in the *Journal* in in the past year has increased somewhat over the preceding year, and the indications are that there will be a still further rise. Some of this is due to the excellent co-operation of the Divisional representatives, and their collection of news. But the main factor probably is the return of the majority of men to civil practice and so

more numerous papers. I note with pleasure some increase in the number of case reports sent in; more yet would be welcome.

67. The rising costs of printing are being reflected in increased charges for reprints. We have done our best to protect authors, by arranging for reprints to be full page size, instead of the smaller rather more expensive size. The advance in price is about 25%.

68. Dr. J. Z. Baruch of Amsterdam has been appointed as our Dutch correspondent, and is supplying us with news items about Holland, on the basis of one letter per quarter.

69. An effort is being made to make generally available a 36-year index of the *Journal*, that is, the period from its origin in 1911 to the end of this year. Such an index has great value historically and is also of considerable practical convenience. At present, we have the material of this index in the form of cards. It is gradually being transformed to typewritten sheets, when it will be possible to estimate its size. Progress will be reported.

70. We still have problems regarding the supply of paper, especially the better quality for reproduction of illustrations. Our printers, The Murray Printing Company, are making every effort to supply our needs.

All of which is respectfully submitted.

H. E. MACDERMOT,
Editor.

Approved.

REPORT OF THE CENTRAL PROGRAM COMMITTEE

Mr. Chairman and Members of General Council:—

71. I have the honour to submit the following report of your Central Program Committee.

The Committee has consisted of the following members:

John Hepburn	Medicine
Roscoe R. Graham	Surgery
Douglas E. Cannell	Obstet. and Gyn.
Alan Brown	Pædiatrics
Robin Pearse	Urology
K. M. Heard	Anæsthesia
H. A. Dixon	Dermatology
D. E. S. Wishart	Otolaryngology
R. G. C. Kelly	Ophthalmology
Lorne D. Proctor	Psychiatry
A. C. Singleton	Radiology
A. R. Hagerman	Armed Forces
T. C. Routley, A. D. Kelly	Secretaries
H. K. Detweiler	Chairman

72. The Committee began its session on December 13th, 1946, immediately upon receipt of the Program suggestions from the Winnipeg Program Committee. Six meetings in all were held, and a complete program was finally agreed upon and published in the *Canadian Medical Association Journal*. Numerous communications were exchanged between the Winnipeg and Central Committees, and every effort was made to provide a scientific program for the Annual Meeting which would meet the needs of the Canadian Medical Profession and represent the medical opinion of all parts of the Dominion.

73. The Central Program Committee desires to record its appreciation of the hearty and constructive co-operation of the Winnipeg Committee in preparing the program.

All of which is respectfully submitted.

H. K. DETWEILER,
Chairman.

Approved.

REPORT OF THE CONSULTANT IN ECONOMICS

Mr. Chairman and Members of General Council:—

74. During the year a number of economic problems have occupied the attention of the Profession in the various provinces. These will be discussed in some detail in the report of the Committee on Economics. In this report a brief outline of the more important problems will be given.

75. We will not forget that in the speech from the Throne in 1943 and again in 1945 the Federal Government announced its intention of making Health Insurance available to the Provinces through the medium of legislation to provide grants for this purpose. The standing parliamentary committee studying the matter produced a Plan but recommended that the financial clauses thereof be referred to the approaching Dominion Provincial Conference on Reconstruction.

76. At the final session of this Conference which adjourned in April last year, no agreement was reached. In the following months temporary individual agreements have been entered into between the Federal Government and six Provincial governments, clarifying their relative fields of taxation and establishing a new basis for Provincial subsidies. It is not always understood however, that these individual agreements *have not* included Federal grants for social services such as the Health Insurance and additional Public Health grants.

77. We are now informed that these grants and any enabling legislation must wait for a greater degree of agreement between the Federal and Provincial governments and that they will not likely become available until after a Conference on the general subject of Social Security has been held. An understanding of this situation is important because it can be taken for granted that no Province is likely to be able to go very far in making Health Insurance benefits available until the Federal grants are made. It has been repeatedly stated that such a program could not be carried out without Federal financial assistance, and at the present time no such financial assistance is available.

78. At this writing the Premiers of two Provinces are reported to be on the way to Ottawa to attempt to clarify the position of their Provinces in respect to grants for Health Insurance and other social security benefits.

79. The only Plan for the provision of medical care which is operating across Canada is the so called Family Doctor plan for the provision of any necessary medical care to entitled Veterans. The past year has probably seen the peak of demand for this service passed and it should be recorded that in most areas few difficulties have been experienced. The medical advisory Committees set up to assist the administration have, we believe, functioned well and have not been overloaded with work. Considerable valuable information regarding this method of providing medical care is being gathered.

80. The Profession in Canada have been watching with great interest the active steps being taken in Great Britain towards the development of a national Health Service. In common with the Profession there, our members have been aware of the apparent need for great increase in the availability of Health Services. The developments which have been announced and are now being discussed so widely depart radically in some respects from the principles which the British Medical Association considers necessary for a continuing sound service of a high standard.

Our interest in the problems of our confrères there is great and it of course, cannot be disinterested. The developments there may influence or perhaps hasten developments here but they will never be copied. There are great differences in the methods and scope of Health Services as they have been developed in Canada as compared with Great Britain. If there should be any tendency to copy the plans developed there, the extensive differences in the methods for providing medical, hospital, and public health services in the two countries should be

fully realized. Any plan which can ever successfully operate in Canada must be a Canadian plan—utilizing and supplementing our present extensive development.

81. While no change has occurred in the Federal field, developments tending to extend Health Services in the three Prairie Provinces as a result of Provincial legislation have, however, proceeded during the year.

82. In Manitoba the operating of the Manitoba Health Plan has been progressing slowly. There is wide public support for this plan which is placing chief emphasis upon the development of better Health Services in rural areas. The report of the Manitoba Committee on Economics will refer to this in some detail. The effective operation of the Plan has been hampered by a serious lack of personnel. In an effort to correct this, the Manitoba Government invited advice from the Rockefeller Foundation. After a careful survey they issued a report outlining steps intended to speed up the training of adequate personnel.

During the year the Advisory Commission, a carefully selected group with special knowledge, has been endeavouring to assist in this development. Some members of the Commission are understood to be concerned over the limited powers of this commission. Most of the actual administration is in the hands of the Department of Health.

The plan in Manitoba is a realistic approach to the extension of rural Health Service. Such a plan is dependent upon careful planning for the provision of such services as Hospitals, diagnostic facilities Public Health and Medical care. No considerations, other than public need and efficiency, should be effective in determining the location of such services in such a plan. The pressures to which those administering the plan may be subjected by local communities are extreme—and it is a question whether Departmental administration, with its inevitable political sensitivity, can be expected to resist those pressures. In the opinion of many, a sound plan can only become operative through the medium of independent administration. Our professional committees continue to recommend this.

83. In Saskatchewan the developments have been watched with great interest. The three chief programs are:—

1. The old age Pension plan for adequate medical, hospital and dental care; in operation since January 1st, 1945.
2. The Swift Current region plan for fairly complete Health Insurance benefits, in operation since July 1st, 1946.
3. The introduction at January 1st last of the provision of Province-wide Hospitalization under a plan in which so called 'Free Hospitalization' is provided out of a Fund collected from payments of $5.00 per capita of the population—backed by a Provincial Government guarantee.

It is proper to record that the Government in Saskatchewan has continued to maintain close relations with the Profession and up to date has been open-minded and amenable to suggestions which have been made by the Profession in the interest of a sound service.

84. The O.A.P. Plan was an experiment agreed to for a three year period—and has six months to run. Under the Plan the medical men doing the work presented their accounts based on the standard fee schedule. They received 50% of the approved accounts at the time and a proportion of the balance remaining in the Fund at the end of the year. For 1945 the medical men received 77½% of their accounts. In 1946 this had dropped to 59%—chiefly because the beneficiaries were more fully aware during the second year of the extent of their privileges.

It is worthy of note, and to some degree inevitable, that the cost of Hospitalization for this group has run very high, being in 1946 nearly $12.00 per capita.

85. Authorities preparing to provide medical and Hospital care for this group should realize it is a relatively costly group to serve. Figures which have emerged from various plans for Prepaid Medical care have shown that the costs in this age group run over twice as much as the average costs for all other groups except infants.

86. The Swift Current Plan is a compulsory plan of Health Insurance for a region at the South East of the Province with a population largely rural, of approximately 50,000 people. It is too early to generalize, but the six month figures showed that medical care had cost less than anticipated, while hospitalization had cost nearly 25% more than anticipated. Medical services are being paid for on a fee for service basis, the Doctors being paid 75% of their approved accounts.

87. The hospitalization plan, is a Province-wide compulsory Plan. Each individual pays $5.00 into a Fund, or this is paid on his behalf, and he is then entitled to "Free" Hospitalization which is taken to include general ward care, drugs, dressings, laboratory and X-Ray service and necessary nursing. Additional ward accommodation may be obtained and paid for by the individual on request, if available.

88. The point credit system is being tried here as a basis for determining the rate of pay to individual Hospitals. It is a very interesting plan and will be watched with care. Inasmuch as Saskatchewan had somewhat less than 5 hospital beds per thousand of her population at the beginning of the year, the demand upon hospital beds is expected to be greater than the supply, in many areas.

The administration of these plans is at present in the hands of a Health Services Planning Commission at present under the able chairmanship of Dr. Fred Mott of Washington, D.C. The Minister of Health has approved of the principle of independent commission administration and has agreed to set up such a Commission at the appropriate time.

89. In the late fall a press report announced that the Government was preparing to introduce a Bill to take over the control of licensing and disciplining of all professions. This naturally caused a great deal of excitement. Copies of the "proposed Bill" were widely circulated. This report proved to be incorrect. Such a Bill was being studied by a Sub-Committee of a Committee of the Legislature but it had not then been reported to the whole Committee. In the last session of the legislature, the Premier who is also minister of Health spoke very strongly, deprecating the release of this draft Bill and regretting the effect it was having, inasmuch as a number of Doctors, about to enter the Province, went elsewhere.

The preparation by anyone of such a Bill, however, indicates the state of mind of a section of the Public. Much ignorance exists as to the nature and powers and purposes of the medical profession Acts. Incidentally these Acts vary greatly from Province to Province. It would be well for the Profession to review their own Acts in each Province. In particular the nature of the relationship between the Government and the profession varies greatly.

90. In Alberta the Health Insurance Act which was passed in 1946 has not been proclaimed. Representations regarding desirable changes in this Act have been made to the Minister of Health. He has stated that full opportunity for discussion will be made available before the Act is proclaimed. He has also stated again that it will not become operative unless Federal legislation makes financial assistance available.

91. In the session of 1947—the Alberta government announced that money was being voted for the purpose of providing full necessary medical, hospital and dental treatment to the Old-age Pensioners and their Dependents, those in receipt of Mothers' Allowances and their Dependents, Blind Pensioners and their dependents and wards of the government. At the close of the session the Government invited representatives of those concerned in giving these services to a discussion of ways and means. It is expected that service will begin on July 1st, 1947. In discussion with the Committee on Economics of the Council and Division, the following agreement was arrived at with the Minister as a temporary arrangement to operate till the end of 1948. The Government will hand over to the suitable medical authorities a sum equal

to $10.00 per capita for each of those eligible. In return for this the Profession have agreed to render necessary service to the members of this group. This will mean that the Profession is administering the details of the service themselves. The Doctor giving service will make out his accounts using the standard fee schedule and the accounts as approved by professional committees will be paid *pro-rata* out of the Fund.

The Profession believe that they will be able to give a high standard of service to the group and are glad of the opportunity of administering the plan themselves. They are not at all sure how adequate the Fund may prove, but they are co-operating in this service.

92. In many Provinces of Canada there has been increased interest in Plans for prepaid medical care during the year. The details of these discussions are dealt with elsewhere but it is of interest that the activity is so widespread. This activity culminated in a conference called for four days just before the opening of this meeting. At this conference representatives from six important plans for prepaid medical care, operating in four Provinces, met with members of the C.M.A. Committee on Economics to study the problem in detail, in the light of their experience. You will receive a report of this Conference later.

93. May I be permitted to say how greatly I have enjoyed meeting active hard working Committees of this great organization and its Provincial Branches during the year. To meet these men is to have re-established one's confidence in the future of medical practice and the solution of problems for the provision of high standard medical care.

All of which is respectfully submitted.

A. E. ARCHER,
Consultant in Economics.

Approved.

REPORT OF THE COMMITTEE ON ECONOMICS

Mr. Chairman and Members of General Council:—

94. A. Your Committee this year undertook to arrange a conference of representatives of those prepaid medical care plans that were organized by or under some control of the medical profession. The purpose of this conference was to bring about an exchange of views in order to ascertain the reasons for the differences that exist between these plans, and to determine the advantages of certain features of the best plans. The conference was slated for Harrison Hot Springs in February, but was later postponed to meet in Winnipeg immediately before the Canadian Medical Association annual meeting. The organizations included in this conference were as follows:

(*a*) Windsor Medical Services Incorporated
(*b*) Associated Medical Services Inc., Toronto
(*c*) Manitoba Medical Services, Winnipeg
(*d*) Medical Services Incorporated, Regina
(*e*) Medical Services Incorporated, Saskatoon
(*f*) Medical Services Association, Vancouver

95. The following questionnaire was the basis for a study.

Organization:

1. Why was your Medical Service group organized?
2. When was it organized?
3. How did it originate?
   A. Was it formed by a Committee of:
      (1) Your local Medical Society?
   or (2) Your provincial Medical Association?
   or B. Was it formed by an independent group consisting of:
      (1) Doctors?
   or (2) Doctors and laymen?
4. Is your Medical service group incorporated as a chartered company?
   A. If so, under what Act?
   B. Do you need powers not given under that Act?
5. What is the general plan of organization or the set-up of your Medical service company or group as regards:
   A. Local areas or branches?
   B. The central over-all organization, if any?
6. What is the present relationship between your medical service group and:
   A. Participating doctors? Are these doctors members of your company or group with a direct vote in the conduct of its affairs at annual or other meetings of the membership?
   B. Your local Medical Society or Societies?
   C. Your provincial Medical Association?
   D. Other groups?
7. Have you more than one Plan?
8. How many subscribers have enrolled in your Medical Service? If more than one type of contract is offered, please indicate the number of subscribers under each type of contract:
   A. Number under surgical contract?
   B. Number under full contract?
   C. Number enrolled in groups?
   D. Number enrolled individually?
9. How is the financial side of your medical service company or group organized?
   A. Are all subscriptions collected placed in one central pool of funds out of which all doctors and administration accounts or expenses are paid?
   B. Are collections from each branch or regional area placed in a separate account for that area and the doctors' accounts plus local administration expenses paid out of this branch account?
      (1) If plan B. is followed, are all reserve funds placed in a central pool or are part left in the account for each branch and part placed in the central pool?
      (2) Again, if plan B. is followed, how is your central organization financed? Is a percentage of all subscriptions collected placed to the credit of the central organization for purposes of administration and central reserve?
   C. What is your present financial position as regards reserve funds or debts?

Administration:

10. Board of Directors:
    A. How formed?
    B. How much medical and how much lay representation?
    C. Are Board members paid?
11. Chief Administrative Officers:
    A. Lay or medical?
    B. How appointed?
    C. Salary?
12. Office Organization:
    A. Size of staff?
    B. Salaries?
13. Outline your procedure of accounting.
14. How is plan sold?
15. How are the participants enrolled?
    A. Individually?
    B. Group?
    C. What size group?
    D. What percentage of any group must enroll to be acceptable?
16. Costs to participants?
    A. In group plan?
    B. In individual plan?
    C. Is there an employer contribution? How much?
17. What was your cost experience for each type of contract during the past year, as regards:
    A. Doctors' services?
    B. Hospital services, if any?
    C. Nursing services, if any?
    D. Drugs, if any?
    E. Have you any information regarding comparative costs under each of the above headings in large cities and in small towns or rural areas?

F. How do your rates to participants vary in urban and rural areas?
G. How do your costs vary in urban and rural areas?
18. If convenient, submit a statement showing a breakdown of your costs into Medical, Surgical and Obstetrical, giving percentage of costs of medical care going for each.
19. If convenient, submit a statement showing a breakdown of costs into Male and Female services, and also into age groups — under 2 year, 10 years, etc.
20. What percentage of your costs go for services rendered by General Practitioners and Specialists? These costs for each of the last three years?

Limitations:

21. Are there any limitations to the service provided under your plans? If so, what are they?
22. If you have any figures showing the effects of these limitations, please give them.

Method of Payment:

If on a fee for service basis:
23. How do doctors report services rendered?
What forms or cards are used?
24. What fee schedules are used?
A. Your provincial fee schedule?
B. Local society schedules?
C. Schedules set up by your Medical Service company or group?
25. What authorizations for services are required?
26. What taxing routing or procedure is followed?
27. Do you prorate accounts from doctors, hospital, etc., and if so at what percentage? Are they satisfied with this percentage?
28. Do you allow for mileage, and if so at what rates?
29. At what rates are specialists paid?

Problems Related to Doctors' Services:

30. How soon must accounts be presented?
31. How do you deal with delayed accounts?
32. What fee schedule is authorized as a basis for payment?
33. Does any part of this schedule present particular difficulty?
34. Do you pay for assistants at operations?
35. What fees are allowed when a case goes directly to a specialist?
36. How do you pay for a case when a General Practitioner assists at an operation and attends to after treatment?
37. How do you adjust the fee when a patient is attended by two doctors in maternity work, particularly when a doctor in an isolated district gives pre natal and post natal care?
38. What forms do you use for reporting?
39. Is there sufficient data on your forms that useful studies could be made of the nature of the morbidity and the incidence of any particular illness, and of the results of treatment?
40. Are your forms well filled out?
41. Are your members satisfied with the services given?
42. How could these services be improved?
43. Do all the doctors in your community do work for your subscribers?
44. If your plan excludes periodic health examinations, do you have any difficulty with "check-ups"?
45. Do you have any difficulty in keeping the new doctors informed and reminding the participating doctors as to terms of service?
46. Do you have any difficulty in adhering to a specialist list?
47. How do you deal with
A. Doctors who consistently pad their accounts?
B. Doctors who put on every extra possible, such as urinalysis, etc.?
48. Has the participant
A. The right of free choice of doctor?
B. The right to proceed directly to the specialist?
C. If not, how is this limited?
49. What percentage of those covered under your plan call for service during the year?
Does this vary in different localities?
If so, what factors influence this?
50. Do any of your members make unreasonable demands on the service?
51. How do you try to control this?
52. Is there any tendency for members to "shop" around to various doctors for opinions or treatment for the same illness?
53. What do you do about this?
54. What percentage of your members drop out of the plan annually?
55. For what main reasons?

Individual Enrolment:

56. Do you find that individual enrolment or single family enrolment is practical?
57. Is the cost too high for the industrial worker?
58. What do you do when you have an income limit and the insured's status changes?
59. Have you an age limit, and if so, is dissatisfaction registered when the contract is cancelled?
60. Do you have any experience in enrolling trade associations, such as barbers, grocers, garages, farm groups?
61. Do you have any demand from dentists, nurses pharmacists, for the service?
62. Are contracts actively solicited?
63. Does your plan include any indemnity contract?

General Problems:

64. What change or changes in your plan, if it could be worked out, would make it more acceptable to your members?
What would make it more easily saleable?
65. Is there any provision for preventive services under your plan? Should there be?
66. What is your experience with merit or experience rating?
67. Do you allow conversion to an individual contract, and if so, what has been the loss ratio?
68. What is your experience on the cost of refractions?
69. What is your policy in regard to owners of x-ray, country hospitals for example, who do not provide interpretation and charge regular fees?
70. A. How do you provide services in isolated areas where there is no resident doctor?
B. How is the problem of mileage handled?
71. Do you have competition from
A. Legitimate insurance companies?
B. Unsound societies or associations?
72. Do you co-operate with insurance companies in "package plans"?
73. Are your relations cordial with life insurance companies who sell group hospital, surgical, weekly indemnity and group life plans?
74. Do you co-operate closely with Blue Cross, and if so, do you participate in a "package plan" with a life insurance company including the insurance company's hospital benefit program?
75. Do you solicit an employer who already has a contract with a Doctor?
76. Do you solicit an employer with a surgical benefit from a life insurance company?
77. Is your plan installed as an employer contract?
78. Do you always insist on employer participation in the cost?
79. A. What is your Experience with special groups, such as nurses and school teachers?
B. What is the difference in the cost of serving these groups?
80. In writing a surgical plan only, do you find that the doctor has difficulty in collecting from the patient for medical cases?
81. A. Do you have difficulty in supplying physiotherapy?
B. Do you recommend that this service be left to the hospital members included in Blue Cross contracts?
C. Do you recommend that this service be left out of medical contracts?
82. A. Are X-ray and other technological procedures used wisely?
B. Are individual charges for laboratory procedures a problem with you?
C. How do you control this?

D. Would it be useful to make separate charges for medical interpretation and for laboratory procedures?

83. Is your plan supervised by the Provincial Insurance Department?

Interprovincial Relationships:

84. Would it be useful if arrangements could be made between plans in various provinces so that subscribers could obtain services wherever they are?

85. Would this require a uniform type of contract for use under each plan?

86 Could arrangements be made for partial coverage under plans operated in other provinces?

87. Do you consider any such inter-provincial arrangement practicable?

It is to be hoped that conferences of this sort will be continued and prove beneficial to the public as well as to the medical profession.

96. B. There was referred to your Committee the problem of studying the salaries paid to doctors throughout Canada. This study was undertaken by a sub-committee of the Nucleus Committee, under the chairmanship of Dr. J. A. Ganshorn, who reports as follows:

Information obtained:

The salaries of physicians, full-time and part-time, in the following governments were learned.

1. Federal Government—Dept. of Veterans' Affairs
   Dept of National Health
   Dept. of Labour
   Dept. of Justice
   *Oct. 1946.
2. Provincial Government—Dept. of Health of nine provinces
   *Dec. 1945 or Jan. 1946.
3. Municipal or Civic Governments.
   Reports obtained from 21 of 30 cities from whom information was requested.
   NOTE: Salaries of doctors under municipal contract as in Saskatchewan and Manitoba were included in Provincial Government reports.
   *Jan. or Feb. 1947
4. Superannuation schemes, etc., in nine provincial governments.

Report based upon:

1. Information obtained ourselves.
2. Information in report of the Committee of the Canadian Public Health Association on salaries and qualifications of Public Health personnel. This report was published by the Federal Department of National Health and Welfare.

The Canadian Public Health Association was requested by the Dominion Council of Health to carry out a survey of salaries and qualification requirements of public health personnel in Canada and to recommend basic salary schedules with attendant qualifications for such personnel. The report was presented and adopted by the Dominion Council of Health in November, 1946. A much more complete and studied report than ours was made. The salaries reported include all changes up to October, 1946. The survey included salary ranges of 491 full-time physicians from the Federal and nine Provincial Health Departments, 21 City Health Departments, and 113 local health units (including health districts).

In addition to basic salaries, data were gathered regarding factors, such as transportation allowances, pensions, etc. A studied analysis and report was made, and recommendations both general and specific were made with regard to salary and qualifications of public health personnel.

Summary of Report:

It is considered that the basic salaries of physicians employed in Public Health and other Government positions requiring physicians are too low.

If the standards of public health service that the Canadian people should have, are to be instituted and maintained, governments and municipalities at all levels must realize that a good salary (with just allowances and privilege of participating in a reciprocal type of pension or superannuation scheme) is the prime essential in attaining these standards. The present scale of salaries is too low to attract the well trained or capable public health doctor, and does not permit or encourage the doctor who is at present in public health work to increase his training and capabilities.

Canada will continue to lose its better trained and more capable Public Health men to countries paying higher salaries until salaries are appropriately raised here.

Recommendations:

97. This Committee makes the recommendation that the schedule of salaries for doctors in government positions throughout Canada be raised substantially, and that factors, other than basic salary, which influence the income of full-time salaried personnel, such as pension or superannuation schemes, sickness benefits, travelling allowances, etc., be given more consideration with regard to their institution and standardization.

The Committee feels that the general and specific recommendations of the Committee of the Public Health Association are excellent, and state that we are in accord and would adopt their recommendations.

98. C. The British Columbia Division referred to your Committee the question of the introduction of new drugs and remedies into Canada duty free. It was pointed out that in the past there has often been undue delay and excessive duty applied to newer remedies. Of the instances brought to our attention, this trouble had developed with preparations not manufactured in Canada. They were brought in either for emergency use on critically ill patients, or were brought in for study, and in neither case were they sold. Your Committee has had considerable correspondence regarding this subject, and we cannot fail to comment on the fact that the reply from the Customs Branch of the Department of Internal Revenue might easily lead us to believe that the Department is controlled by regulations, rather than having those regulations made to suit the country.

All of which is respectfully submitted.

G. F. STRONG,
Chairman.

Approved.

The General Council expressed appreciation of the work Dr. Strong had done in organizing and carrying through the recent Conference on Voluntary Health Service Plans

SUPPLEMENTARY REPORT OF COMMITTEE ON ECONOMICS

The following resolutions, approved by the Conference on Prepaid Medical Care Plans, were passed to General Council for consideration:

RESOLUTIONS PASSED BY THE CONFERENCE ON PREPAID MEDICAL CARE PLANS HELD UNDER THE AUSPICES OF THE COMMITTEE ON ECONOMICS OF THE CANADIAN MEDICAL ASSOCIATION

1. That this Conference requests the Canadian Medical Association to set up a suitable committee, the membership of which shall include a member from each of the Plans here represented, and it is further recommended that this committee shall have power to add to its numbers. This committee shall be requested:
   (1) To consider the advisability of forming a federal organization to further and extend the purposes of these existing plans.

(2) If it is deemed advisable and feasible to create such an organization, to consider and outline:

(*a*) its functions

(*b*) its desirable form

(*c*) if necessary, to explore the possibility of securing a federal charter through which it can function

(*d*) to draw up a possible outline for a charter and articles of agreement

(*e*) to make a report through its chairman of their findings in this regard to the Executive of the Canadian Medical Association at its fall meeting.

(3) To collect data with regard to existing plans for prepaid medical care, both the co-operative and medically sponsored plans, and to consider their advantages and disadvantages.

(4) To make the information obtainable to existing plans and others interested in such services.

(5) To suggest a method by which such an information service may be continued and as necessary extended.

(6) To make a report through their chairman to the Executive of the Canadian Medical Association upon their recommendations.

2. That this group recommend that in the establishment of any voluntary prepaid medical service plan endorsed by the medical profession, the organization be set up under joint lay and medical control, but also so set up that at all times the control of matters concerned with the purely professional side of the plan be determined by the medical members.

3. Whereas the certification of specialists by the Royal College of Physicians an Surgeons of Canada has provided a further means of identification of physicians and surgeons adequately trained in their respective fields, and Whereas it is desirable that the services of specialists be utilized in plans of prepaid medical care with appropriate remuneration from the common fund,
Therefore BE IT RESOLVED that this conference recommend that ordinarily doctors who are recognized specialists be remunerated at specialist rates for work done in their special fields, and that remuneration at general practitioners rates be paid for all other work done by them for the plan.

4. That with regard to all areas in which a public demand exists this body urges the adoption of sound medical care plans when endorsed by the organized medical profession.

5. That province-wide prepaid medical care plans appear to be feasible and desirable.

6. That in light of the demand by the public for individual enrolment, the management of all prepaid medical care plans be urged to study the possibility of introducing means to provide for individual enrolment.

7. That in the opinion of this group, all medical care plans should seek to set aside a suitable reserve or stabilization fund adequate to meet unforeseen emergencies.

8. That attention should be drawn to the fact that in medically sponsored plans an important additional security is created by the varying methods by which, with respect to the provision of services, the profession has underwritten the plan.

9. That as an ordinary practice the extra billing of patients be not approved.

That this resolution be referred to the special committee, if and when it is set up, with instructions to bring back a report at our next session.

10. That with respect to the provision of specialist services the custom ordinarily prevailing in the area concerned should be followed in that area.

11. That a vote of gratitude be extended to the Committee on Economics of the Canadian Medical Association for their kindness in bringing together the representatives of prepaid medical care plans across Canada, and to assure them that we are hopeful that the value received may compensate them for the effort and expenditure involved.

Following consideration of the above mentioned recommendations and with particular reference to recommendation No. 1, it was agreed:

1. That a committee be appointed to be known as the Committee on Prepaid Medical Care Plans, and that it be composed of:

Drs. L. H. Leeson, Vancouver (*Chairman*)
A. H. Meneely, Nanaimo
H. H. Milburn, Vancouver
J. A. Ganshorn, Vancouver
J. A. Hannah, Toronto
F. A. Brockenshire, Windsor
Grant Beaton, Winnipeg
Charles May, Regina
A. L. Caldwell, Saskatoon
G. L. Watson, Vancouver

with power to add to their numbers and with Drs. G. F. Strong and Wallace Wilson of Vancouver as consultants,—to give effect to the recommendations of the Conference on Prepaid Medical Care Plans.

2. That the committee so constituted shall have the following functions:

A. *With respect to the collection and tabulation of data on plans for Prepaid Medical Care*:

(1) To collect data from the plans represented at the conference and from such other plans as it may deem desirable, operating in Canada or under similar conditions elsewhere.

(2) To make such collected data available to the plans concerned and, upon request, to the Secretary of any Division of the C.M.A. or any of its component parts.

B. *With respect to a proposed body to correlate the Prepaid Medical Care Plans*:

(1) To determine its necessity and advisability and, if so determined—

(2) To outline its form.

(3) To consider the necessity of securing a Federal Charter, and, if so considered—

(4) To draw up a proposed Charter and Articles of Agreement.

(5) To secure (with the sanction of the General Secretary) legal aid in drafting the same.

(6) To outline the objects and desirable functions and powers of the proposed plan.

C. *With respect to co-operation*:

To study methods and extent of co-operation, and with whom.

3. That the Committee so constituted report its findings with regard to 2-A (1) and (2), and

2-B (1) to (6) and 2-C to the Executive Committee of the C.M.A.

4. That the necessary expenses of this committee, up to the sum of $500.00 be paid by the Canadian Medical Association.

STATUS OF THE NEW COMMITTEE ON MEDICAL CARE PLANS

It was pointed out that, while certain duties formerly engaging the attention of the Committee on Economics will now become the duty of the new Committee on Medical Care Plans, the closest liaison should exist between the two committees by the appointment of a member from each to the other; and, further, while the special committee is under instructions to report to the Executive Committee, it is understood that, for completeness of procedure, the special committee will also send to the Committee on Economics a copy of each report which it makes to the Executive Committee.

Re DOMINION-WIDE TARIFF

The opinion was expressed that there should be some attempt made by the C.M.A. to establish a Dominion-wide tariff for medical services. According to constitution, the C.M.A. has no authority or responsibility in the field of tariff, as this is a matter entirely under the jurisdiction of the Divisions. It was agreed that the Divisions be asked for an expression of opinion on the suggestion that the C.M.A. set up a Dominion-wide tariff.

REPORT OF THE COMMITTEE ON LEGISLATION

Mr. Chairman and Members of General Council:—

99. During the past year there has been no medical legislation, either federal or provincial, requiring the attention of this committee.

All of which is respectfully submitted.

C. J. VENIOT,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON CREDENTIALS AND ETHICS

Mr. Chairman and Members of General Council:—

100. No problems have been referred to this Committee during the past year.

All of which is respectfully submitted.

J. D. ADAMSON,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON PHARMACY

Mr. Chairman and Members of General Council:—

101. Last year this Committee announced the publication of the Physician's Formulary. Members of the C.M.A. are entitled to a free copy on request. To the present time 7,276 copies have been requested and distributed. An additional 1,240 copies have been sold by the publishers.

102. At last year's meeting the question of restricting penicillin and preparations containing very large amounts of vitamin D to sale on prescription only was discussed. Since then the Food and Drugs Act has been amended by P.C. 186, February 12, 1947, restricting streptomycin and penicillin and its salts to sale by prescription, except preparations of the latter for oral use which contain not more than 3,000 International Units per dose. Strong vitamin D preparations, under P.C. 426, February 7, 1946, may not be advertised for sale to the public and must be labelled "for therapeutic use only". These measures give some protection to the public but perhaps not all that might be wished. No further action is recommended at this time.

103. The Chairman has been in correspondence with the Department of Health and Welfare in Ottawa regarding the regulation of the sale of barbiturates. Some doctors feel that the present regulations are not sufficiently stringent and that irregular use of barbiturates is all too common. The Department of National Health and Welfare does not feel that changes in the laws or regulations are required. We are trying to obtain further evidence before making a recommendation to the General Council.

All of which is respectfully submitted.

J. K. W. FERGUSON,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON EPIDEMICS

Mr. Chairman and Members of General Council:—

104. It is with real regret that your Committee on Epidemics announces the retirement of Dr. T. H. Leggett as Chairman of the Committee. For the past five years Dr. Leggett has been actively concerned with the subject of the prevention of widespread epidemic disease, and with the formation of a co-ordinated plan of action should such an event occur. He finds now that he is unable to carry on this work any longer, but he has promised to act in an advisory capacity to the Nucleus Committee, and we have already taken advantage of this kindness on his part.

Your Committee on Epidemics reports that during the past year there have been no outbreaks of epidemic disease of national magnitude.

There have been, however, an increased number of cases of anterior poliomyelitis across the country, which assumed disturbing proportions in some districts. Fortunately on the whole, the disease appeared in its less severe forms.

Diphtheria also was more prevalent in some communities during 1946, and your Committee would recommend that the C.M.A. might well emphasize again the great importance of having all children properly immunized.

The following is a copy of a statement by the Deputy Minister of National Health outlining the present policy of the Dominion Government in regard to mass immunization against influenza.

"Dear Doctor Brown,

105. Further to our conversation regarding the policy for the employment of influenza vaccines, may I say that the following represents the consensus here, speaking only of present day vaccines:

1. The use of vaccines is still in the experimental stage.
2. The long range protective value of vaccines is still in doubt. "Possibly not greater than two months".
3. The keeping qualities of the vaccines is still not too good. (Possibly three to six months).
4. No reliable potency test for the vaccines has been achieved as yet. (Thus adequate dosage is difficult to determine).
5. Stocks of the vaccines are available in Canada and the U.S.A. (The following firms in Canada are licensed to sell Influenza Vaccines):

Lederle Laboratories, Inc.
Parke Davis & Co.
Sharp & Dohme, Inc.
Squibb & Sons,
Connaught Laboratories.

Accordingly, therefore, in line with the above, I feel our expressed policy at the present time would be to recommend that "no mass immunization of populations should be undertaken with influenza vaccines, except in the early stages of an outbreak and only when the prevalent type of virus has first been determined, and found to be of the same antigenic pattern as those used in the preparation of the vaccine. Even then the possibilities of mass sensitization to egg protein from the vaccines must be taken into account.

Yours sincerely,

(Sgd.) C. P. Brown for
G. D. W. Cameron, M.D., D.P.H.,
Deputy Minister of National Health."

106. A copy of the above was sent to all Provincial Chairmen, accompanied by a note stating that the Executive of the C.M.A. endorsed the views expressed by the Deputy Minister, but pointing out that the whole question was one for the Provincial Departments of Health to decide individually.

107. Your Committee on Epidemics hopes to have another meeting of the Provincial Chairmen in Ottawa within the next year to discuss further problems related to epidemic disease.

All of which is respectfully submitted.

LAWRENCE W. BROWN,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON INDUSTRIAL MEDICINE

Mr. Chairman and Members of General Council:—

108. I have the honour to present the following report on the activities of the Committee on Industrial Medicine for 1946-47.

On December 19th, 1946, a request was received from the National Council of the Canadian Industrial Editors Association for a series of articles on health subjects to be published in the house organs of various industries across Canada.

In making this request the Canadian Industrial Editors Association pointed out that it has as its members the editors of approximately 150 magazines or newspapers which are published by Canadian companies for their employees or trade associates. The circulation of these publications varies from two hundred thousand copies per issue to several hundreds. The number of readers, however, may be multiplied several times because it is known that the majority of house publications are read not only by the addressee but also by the members of his family.

This request was studied at a meeting of the Nucleus Committee held in Montreal on January 22nd, and it was considered that it presented an opportunity for the education of large groups of industrial workers and others in matters of health. It was therefore agreed unanimously that we should co-operate with the Canadian Industrial Editors Association in supplying them with articles for publication.

109. A start in this project has been made by collecting a series of articles which have been published in the house organs of two large Canadian companies. With the co-operation of the Editor of the *Canadian Medical Association Journal*, we have had twelve of these articles re-written and where necessary condensed to three hundred words each. These twelve articles have been forwarded to the Canadian Industrial Editors Association with the approval of our Committee, and it is expected that publication will begin shortly. It is anticipated that we will be able to make more such articles available in the near future.

We have requested the Provincial members of our Committee to forward us any articles which may be available for re-writing and publication.

If this project meets with a satisfactory response it is proposed to continue this work by having a further series of articles especially written for this purpose.

All of which is respectfully submitted.

H. GRAHAM ROSS,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON EDUCATION

Mr. Chairman and Members of General Council:—

110. The Committee on Education begs to submit the following report:

In accordance with the arrangement for reciprocal representation between the Canadian Medical Association and Association of Canadian Medical Colleges, as agreed upon at the Banff Meeting of Council, your Chairman was delegated to attend the Meeting of the Canadian Association of Medical Colleges in Ottawa in September, 1946. The discussion and exchange of views was extremely profitable and will undoubtedly be of benefit to both organizations. At this Meeting, the Canadian Association of Medical Colleges named Dr. Hall as their representative on the Canadian Medical Association Council and suggested that he act on the Committee on Education. Your Chairman named Dr. Hall a member of that Committee and invited him to attend the Meeting of the Nucleus of the Committee held in Hamilton on March 6th, 1947. Two resolutions were drafted and have been submitted for approval to the Branch Chairman of the Provincial Committees on Education who are members of our Committee. Replies have been received from the majority, all of whom expressed approval of these resolutions which are accordingly submitted herewith:—

1. In view of the interest shown by the Medical Colleges in preparing their undergraduates for the ultimate practice of medicine, it would be in the interest of the Medical Colleges if the Canadian Medical Association were to provide the Colleges with general information of what in their opinion, comprises the practice of general medicine and the proportion of the different types of cases which might be expected to be seen and handled by the general practitioner. Also that the Canadian Medical Association conduct a survey in order to obtain this information. Such a survey should provide the opportunity for the physicians so consulted to make recommendations in respect of the inadequacies of their own medical education based on their experiences in practice.
2. Since the instruction and adequacy of the training received by the junior interne in the Canadian Hospitals is of paramount importance in raising the standard of practice of medicine in Canada and since this phase of "Continuing Education" is a responsibility in many respects of the Universities of Canada, it is recommended that the Association of Canadian Medical Colleges prepare, in general terms, a basic syllabus of training for junior internes which may be used by Canadian Hospitals in planning more adequate junior rotating services. In order to effect better instruction of internes in Canadian Hospitals, it is suggested that the university teaching centres provide for active staff members of non-teaching hospitals, who may so request, instruction in teaching and conducting bed-side clinics and clinical pathological conferences, etc.

All of which is respectfully submitted.

O. W. NIEMEIER,
Chairman.

This report was received and passed to the Executive Committee for further study. General Council was of the opinion that a recom-

mendation such as No. 1 in the report should not be acted upon unless it is approved by the Association of Medical Colleges of Canada.

REPORT OF THE COMMITTEE ON CONSTITUTION AND BY-LAWS

Mr. Chairman and Members of General Council:—

111. At the last meeting of Council, two problems raised by the 1946 Report of this Committee were referred back to the Committee for further study and report. They had to do with representation of selected affiliated societies on Council and the addition to the Executive Committee of three "members-at-large" to be elected from Council.

These problems have been studied by the Nucleus Committee and by correspondence, with the whole Committee.

112. In the matter of representation on General Council of selected affiliated Societies, it is recommended that this proposal be dropped. Obviously not all affiliated Societies could be given this privilege and the drawing of a distinction might be difficult. Also the privilege might be abused,—for example, by the founding of a large number of medical societies for the purpose of obtaining affiliation and representation on Council.

113. Your Committee recommends also that no action be taken to provide for the enlargement of the Executive Committee by three "members-at-large."

114. The Assistant Secretary referred to the Committee a problem relating to delegating authority to a specific officer of the Association to negotiate legal instruments in the name of the Association. There is no provision in the Constitution and By-Laws specifiying procedure for the delegation of this power.

It is the opinion of the Committee that the Executive Committee has the necessary authority to authorize its officers to act for the Association in these matters.

115. The Committee recommends that the Executive Committee authorize and instruct the General Secretary to negotiate specified legal documents on behalf of the Association, and the Assistant Secretary to act as an alternate for the General Secretary in the absence of the latter.

All of which s respectfully submitted.

R. I. HARRIS,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON MATERNAL WELFARE

Mr. Chairman and Members of General Council:—

116. The following report is submitted on behalf of the Committee on Maternal Welfare for the year 1946-47.

117. It is recommended that the C.M.A. should extend commendation and appreciation to the Canadian Red Cross Society in making available a free blood transfusion service, thereby making an important contribution to the reduction of maternal mortality from hæmorrhage.

It is desired to stress that, notwithstanding the blood transfusion facilities provided by the Canadian Red Cross, every possible effort should be made to encourage practitioners to maintain extreme vigilance in the prevention of hæmorrhage, which is now considered to be the major cause of maternal mortality.

118. With regard to the proposal, to which reference was made in the last Annual Report of this Committee, that a five year study be undertaken of the results of treatment of toxæmias of pregnancy, it is considered that this would be impracticable at the present time.

It is recommended that the classification of Toxæmias of the American Committee on Maternal Welfare be uniformly adopted in Canada by Medical Schools, Hospitals and Provincial Maternal Welfare Committees and that a program be initiated whereby the approved treatment of the various forms of toxæmia should be set forth by recognized Canadian authorities in a series of articles and published in the *Journal* of the C.M.A. and subsequently reprinted in the form of a brochure to be distributed to all practising Canadian physicians.

It is felt that implication of the foregoing recommendation would provide a framework for a subsequent five year study of the results of treatment of toxæmias.

119. It is recommended that appropriate steps be taken, probably through the respective Deputy Provincial Ministers of Health, to encourage all practitioners, because of the prevalence of Pulmonary Tuberculosis, to have a routine X-Ray examination of the chest of all antenatal cases.

Because of the fact that facilities for treating Tuberculosis appear, at the present time, to be greatly overtaxed, it is strongly urged that Tuberculosis, as a complication of pregnancy, be given special consideration for institutional treatment.

120. In the last Annual Report of this Committee, it was recommended that a plan be instituted for the detailed investigation and study by each Provincial Maternal Welfare Committee of the causes and preventability of the individual maternal deaths each year in every Province, and that this be undertaken by a detailed study of case records in co-operation with the respective Departments of Public Health.

Arrangements to pursue this recommendation are being effected in British Columbia and it is hoped that this Province will, by next year, be able to report interesting and worthwhile results.

All of which is respectfully submitted.

A. B. NASH,
Chairman.

This report was received and referred to the Executive Committee for further study in co-operation with the Committee on Maternal Welfare.

REPORT OF THE COMMITTEE ON MEMBERSHIP

Mr. Chairman and Members of General Council:—

121. During the current year the paid membership in the Association has increased mainly because of the very excellent response of the ex-medical officers who had returned prior to December 31, 1945. This group became eligible to pay fees on January 1st, 1947, and to date a good percentage of them have paid. It may now be taken as a safe generalization to make that about 70% of the doctors afforded complimentary membership will continue as sustaining members of the Association.

122. Many of the ex-servicemen are still undertaking post-graduate work, and some of them have suggested that they would like to pay a membership fee, but their present income does not permit them to do so. To alleviate this situation, the Board of Directors of the Ontario Division has recently established a new fee for conjoint membership of men still taking post-graduate training in hospitals, at the rate of $5.00, compared with the customary conjoint fee of $20.00. In accordance with this decision, the C.M.A. accepts as its proportion of this reduced fee the sum of $2.50 in place of the present annual fee of $8.00.

123. In the Provinces of New Brunswick and Alberta the College of Physicians and Surgeons collects the only provincial fee charged. From this fund the affairs of the Division are financed. The Division out of the fund so secured pays to the Canadian Medical

Association $8.00 per member for the privileges of membership in the Association. At the end of the year 1946, there was in Ontario a group of 1,035 physicians who had not been members the preceding year. A special letter was sent to these and, as a result, 100 of them have paid their membership. We have no doubt that there is a similar group of resistant individuals in the other Provinces where voluntary membership prevails, and our 10% response in Ontario suggests that they are hard to convince that they are acquiring benefits from the work of organized medicine to which they should contribute.

124. The membership figures will be found in the Report of the Executive Committee.

125. It is the opinion of the Committee that in those Provinces where membership is not 100%, active canvass in each area by local societies can alone achieve a real substantial increase in membership in the Association.

All of which is respectfully submitted.

A. B. WHYTOCK,
Chairman.

Approved.

REPORT OF THE REHABILITATION COMMITTEE

Mr. Chairman and Members of General Council:—

126. Your Committee begs to report that, owing to there having been no calls upon its services since the Annual Meeting of the Canadian Medical Association in June, 1946, no meetings have been held.

It is felt that, while there might have existed a need for the existence of this committee during the post-war years, experience has shown that the majority of the medical men who served in the armed forces have been able to make arrangements for themselves without recourse to this Committee.

127. It is therefore felt and recommended that this Committee be discharged, and that the continuance of such a committee, which was inaugurated only to attempt to meet the estimated needs of a certain group of individuals, who apparently do not require this service, be deleted from the Committees of the Association.

All of which is respectfully submitted.

H. M. ELDER,
Chairman.

Approved.

Note: The negative character of this report pays tribute to the excellent services rendered by the members of the Divisional Advisory Committees appointed under the Canadian Medical Procurement and Assignment Board.

REPORT OF THE BOARD OF DIRECTORS OF THE DEPARTMENT OF CANCER CONTROL

Mr. Chairman and Members of General Council:—

128. During the past year the two outstanding events in the field of Canadian work on cancer have been the disposal of the King George V Silver Jubilee Cancer Fund for Canada, and the establishment of the National Cancer Institute of Canada.

129. The best way to use wisely the money of the King George V Fund has been a matter of concern for a number of years and a matter of special interest to your Committee, as it was to it that the Trustees of the Fund turned for advice. On the establishment in March, 1947, of the National Cancer Institute of Canada it was felt that the money of the Fund could be expended in no better way than in financing the infant Institute until it attained adolescence. It is now possible to report that a sum of $150,000.00 a year for a period of three years has been voted by the Trustees for the use of the Institute. This leaves a sum of close to $50,000.00 in the Fund.

130. To clear up the confusion which naturally arises in the minds of medical men when these matters are discussed, it may be said that there are three national bodies now engaged in the campaign against cancer in Canada. These are (1) the Canadian Cancer Society, whose chief functions are the education of the public and the raising of funds; (2) the National Cancer Institute of Canada, which will have many activities, the chief of which is research; and (3) the Canadian Medical Association which through its Cancer Committee is responsible principally for the education of the medical profession.

131. Your Committee has given earnest consideration to the most practical means of furthering knowledge of the profession in matters pertaining to cancer. The conclusions arrived at are embodied in the following recommendations:—

1. Cancer should be made a reportable disease. It is felt that very valuable information would be obtained were this measure to be adopted.
2. The Handbook on Cancer, published by the Canadian Medical Association in 1938, should be reprinted and if necessary revised. Before such a course is adopted it was felt advisable that an opinion as to the usefulness of the book and the desirability of republication should be obtained from those members of the profession who received the original book.

   The advisability of bringing out a French version of the Handbook, either a direct translation or a completely new work, is under consideration.
3. The chairmen of program committees in national, provincial and district medical societies be asked to arrange for speakers on the subject of malignant disease.
4. A speaker on cancer to be included in the eastern and western lecture tours of the Canadian Medical Association.
5. Steps be taken to foster the development of scientific exhibits at medical meetings for the purpose of instruction in the field of cancer.

All of which is respectfully submitted.

WILLIAM BOYD,
Chairman.

Approved.

Following discussion of recommendation No. 2 in this report it was agreed that re-publication of the Handbook on Cancer be approved provided that this can be accomplished without cost to the Association. In the event of the Handbook being re-published it was the opinion of General Council that sympathetic consideration should be given to the production of a French version.

Re EDUCATION IN CANCER CONTROL

The following resolution was passed by General Council:

1. That the Council of the Canadian Medical Association now assembled records its pleasure in the recent development in the field of Cancer Control, particularly in the extension of public education and in the formation of the National Cancer Institute;
2. That it reaffirms its earlier expressed attitude with respect to the importance of its position and obligation within the trinity of effort—public education, professional education and research—and that its Department of Cancer Control be authorized and instructed to undertake a more intensive educational program than has hitherto been proposed as soon as funds become available;

3. that the National Cancer Institute and the Canadian Cancer Society be advised of this program.

REPORT OF THE COMMITTEE ON LABORATORY TECHNICIANS

Mr. Chairman and Members of General Council:—

132 Although no meeting of the Committee has been held, your Committee on Laboratory Technicians can report a very active year. All business has been transacted by correspondence, and the thanks of the Chairman are hereby tendered to the members of the Committee for their prompt attention to the business placed before them.

133. Detailed applications from six hospitals for approval of their respective laboratories as training schools for laboratory technologists have been considered by the Committee and of these, two have been approved.

134. At the time of writing six additional applications are pending and formal consideration of these will not be undertaken until an inspection and report has been made by the member of the Committee situated closest to the applicant laboratory. It has been found that the impressions gained by a qualified observer greatly assist the Committee in assessing the suitability of an applicant laboratory for training purposes, when considered in conjunction with the factual data supplied in the completed application form. It is now a rule of the Committee that such an inspection will be carried out before any laboratory will be considered for approval.

135. At the Annual Meeting of one of the Divisions, the policy of the Committee in requiring the presence of one fully qualified member of the technical staff of a laboratory for each student accepted, was questioned. It is the considered opinion of this Committee that the training of laboratory technicians is best carried out under the apprenticeship system, and this cannot be applied to large classes of students. For this reason, paragraph 6 of the "Basis of Approval of Schools for Laboratory Technologists" is reaffirmed:

> "6. The enrolment of students at any one time shall not exceed one student to each full-time qualified member of the technical staff of the laboratory."

136. Your Committee has maintained contact with the Canadian Society of Laboratory Technologists, and has endeavoured to interpret the rôle of this organization to doctors who seek information on the training and registration of laboratory technicians. The Society, after due notice, instituted on July 1st, 1946, the following uniform educational standard for candidates proceeding to examinations for registration:

> "EDUCATION: Senior Matriculation or the equivalent educational standing in the various provinces. Two science subjects are required, one of which must be chemistry.
>
> EDUCATIONAL STANDING IN THE VARIOUS PROVINCES
>
> British Columbia—Senior Matriculation
> Alberta—Grade XII
> Saskatchewan—Grade XII
> Manitoba—Grade XII
> Ontario—Senior or Honour Matriculation or Grade XIII
> Quebec—Senior High School Leaving Certificate or Senior Matriculation of McGill
> New Brunswick—Senior Matriculation or Grade XII
> Nova Scotia—Grade XII
> Prince Edward Island—1st Class License Certificate of The Department of Education or 3rd Year Certificate of Prince of Wales College
> Newfoundland—Senior Associate Diploma
>
> A transcript of educational credits must be submitted with registration forms."

137. It has been brought to our attention that in certain approved schools, students not possessing this standard of scholastic attainment have been accepted for training. This has resulted in hardship to certain students who have entered training in good faith but who are not eligible to try the qualifying examinations by reason of their lack of preliminary education. It is desired to emphasize for the benefit of our members who are in charge of hospital laboratories approved for the training of technicians, that the minimum educational requirements of the C.S.L.T. should be demanded of all student technicians.

138. In the month of March the list of approved schools for laboratory technologists was completely revised and republished. The list of approved schools now includes 32 hospital laboratories from coast to coast. All of these provide courses leading to the General Certificate of the Canadian Society of Laboratory Technologists, and in addition, 10 of them provide courses in one or more of the technical specialties of Bacteriology, Hæmatology, Pathological Chemistry, Histology or Serology.

139. All documents used in the work of the Committee, including the basic "Application for Approval, Schools for Laboratory Technologists," are at present undergoing revision, with a view to reprinting in more useful form.

All of which is respectfully submitted.

GEORGE SHANKS,
Chairman.

Approved.

It was recommended by General Council that the Committee on Laboratory Technicians should confer with representatives of the Canadian Hospital Council and the Committee on Education of the C.M.A. with a view to drafting regulations acceptable to all groups concerned.

REPORT OF THE COMMITTEE ON APPROVAL OF HOSPITALS FOR INTERNSHIP

Mr. Chairman and Members of General Council:—

140. Your Committee has experienced a year of considerable activity, and although no meeting of the whole committee has been possible, the business has been transacted expeditiously by correspondence.

141. A total of eighteen applications for approval for internship have been made to the Canadian Medical Association and of these sixteen have received the attention of the committee, the remaining two being held pending receipt of further information. Of the total number of applications considered, eleven have been adjudged worthy of inclusion in the list of approved hospitals, four have been commended, and the remaining one has not been considered worthy of inclusion and deferred for the inauguration of improvements which have been recommended.

142. The status of the larger hospitals operated by the Department of Veterans' Affairs was the subject of prolonged study and discussion by the members of the Committee. With a full appreciation of the marked improvements which have been made in these hospitals by their affiliation with University teaching centres, by the appointment as part time staff members of consultants and specialists, and by the application of the most modern methods of diagnosis and therapy, several members of your Committee were not convinced that the service in these hospitals fulfilled the basic requirements for the all round training of junior interns, which is the essential function of the Committee to assess. The obvious deficiencies for basic junior training are the absence of obstetrical, gynæcological and pædiatric services. This difficulty was taken up with the Director General of Treat-

ment Services and arrangements were initiated to provide by affiliation with nearby civilian hospitals the experience which was lacking in the otherwise acceptable Departmental hospitals. As a result of these negotiations, and with the assurance that this additional training would be afforded to junior interns, the following D.V.A. hospitals have been included among the Canadian institutions fully approved for internship:

Shaughnessy Hospital, Vancouver
Colonel Belcher Hospital, Calgary
Deer Lodge Hospital, Winnipeg
Westminster Hospital, London
Christie Street (and Sunnybrook) Hospital, Toronto
St. Anne's Hospital, Ste. Anne de Bellevue
Queen Mary Hospital, Montreal
Camp Hill Hospital, Halifax

143. A complete reassessment and revision of the list of hospitals in Canada which are approved and commended for internship has been carried out with a view to early publication. The list now includes 65 approved hospitals which provide 1,303 desirable internships of which 273 are final year internships under university supervision. A supplementary list of 8 hospitals providing 33 internships is included in the commended class, in view of the fact that, while providing excellent training, they do not comply fully with all requirements for full approval.

144. Your Committee has approved of an arrangement requested by Dalhousie University whereby all of the final year undergraduates will be afforded at least six months' internship in two approved general hospitals, which are utilized for teaching purposes, and a proportion of them will spend two three-month periods in special hospitals not eligible for approval, but under university supervision by the Faculty of Medicine. It has been agreed that a combined internship of this type shall be regarded as equivalent to one year's junior internship in an approved hospital.

145. Your Committee notes with satisfaction that a beginning is being made by the Royal College of Physicians and Surgeons of Canada in the elaboration of standards of approval of hospitals for graduate training in certain of the medical specialties. As noted on previous occasions, there is widespread demand for the identification of those Canadian institutions which provide for candidates for certification, training acceptable to the College. The records and facilities of the Committee on Approval of Hospitals for Internship are at the disposal of the Royal College of Physicians and Surgeons to assist in the important work which that body has undertaken.

All of which is respectfully submitted.

HARVEY AGNEW,
Chairman.

Approved.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH

Mr. Chairman and Members of General Council:—

146. The Committee on Public Health has the honour to present the following report.

In January, 1947, the General Secretary requested the nucleus committee to make a study of the status of compulsory pre-marital examinations in the various provinces of Canada and to suggest a policy for the Canadian Medical Association on our attitude toward this procedure.

From the provincial representatives we were able to obtain details of the legislation on this subject in each of the provinces and the first part of this report is a description of the procedure in the various provinces. In most cases a copy of the relevant act of the provincial legislature and of all the forms used in its administration has been forwarded to the General Secretary for incorporation in the files of the Association. The second part of the report is an analysis of the views of the nucleus committee on this subject, and an attempt to formulate a policy for the Association to adopt.

No legislation on this matter has been adopted in the provinces of Nova Scotia, New Brunswick, Quebec or Ontario. The New Brunswick representative informs us that the subject is under discussion by the Department of Health of that province.

Prince Edward Island

147. In July, 1946, legislation entitled "An Act to Require Pre-marital Health Examination, Chapter 23" came into force.

Its object is to guard against the marriage of an individual who is suffering from syphilis in a communicable stage and it directs that every person who intends marriage in the province shall, before the intended marriage and in sufficient time theretofore to meet the requirements of the Act, submit to a clinical examination and the withdrawal of blood for a Wassermann test at the hands of a licensed physician. When the sample of blood is forwarded to the laboratory of the Department of Health, the physician indicates on the blank which accompanies it that this test forms part of a premarital examination. Along with the result of the serological examination the Department of Health forwards to the physician one copy of a "Form A" and two copies of a "Form B". On Form "A" the physician records his opinion of the state of health of the subject with regard to the following points:

1. Is not infected with syphilis.
2. Is infected with syphilis, but is not in a stage of the disease which is likely to become communicable.
3. Is infected with syphilis which is at present in a communicable state.

and sends the Form back to the Department of Health.

The physician is required to inform the candidate verbally of the report which he sent to the Department of Health and furnishes him with two copies of Form B which simply states that he has had an examination and that the law has been complied with. One of these copies is for the candidate and one for his or her fiancé (who may live in another parish). This Form B must be submitted to the license clerk of clergyman before the marriage can be solemnized.

The law provides further that the Department of Health *must* notify the physician of the intended partner of the findings recorded on Form A and that the physician so notified *may*, if he deems it advisable, tell the intended spouse of these findings.

It is to be noted that the act does not forbid the marriage of a person who has communicable syphilis, but it does insure that the condition will be discovered and puts two powerful bars in the way of marriage by a person so afflicted. The first is the conscience of the infected person and his or her unwillingness to enter into marriage in the presence of such an infection and the second is the knowledge transmitted to the intended wife or husband.

The provincial representative reports that there has been complete co-operation by the profession and no trouble over fees. It is felt that the Act has served a useful purpose in public health education and it is noted that many individuals have a "pre-premarital" examination before the compulsory one.

Manitoba

148. In this province the pertinent legislation is "Chapter 36: An act to amend the Marriage Act" assented to April 13, 1946, and proclaimed shortly afterward.

This Act provides that within thirty days of the intended marriage the candidate must submit to the withdrawal of blood by a licensed physician. On the receipt of the laboratory report the physician must inform the subject in writing of the result and issue to him a certificate saying that the law has been complied with. Without this latter certificate the marriage cannot be solemnized.

It is to be noted that the emphasis here again is entirely on syphilis. The provincial representative informs us that there is some complaint by the patients

concerning the fee of five dollars which the Manitoba Medical Association executive decided the physician should charge. The Department of Health is considering simplifying the procedure so that the physician will need to see the patient only once, mailing the certificates later when the result of the blood test in known. If this change is made it is understood that the profession would consider reducing the fee to three dollars.

ALBERTA

149. The legislation in force required the taking of a serological test for syphilis within fourteen days of the solemnization of the marriage. The physician furnishes the candidate with a "Form H" stating that the blood test has been done and that the result will be communicated by the physician to his patient. It is interesting to note that the result of the test does not need to be conveyed to the parties concerned prior to the marriage. Presumably, in actual practice, it is communicated as soon as it is received.

BRITISH COLUMBIA

150. By virtue of the "Marriage Act", legislation dated 1936-37-38 and amended in 1939 no marriage can be celebrated without a certificate issued by a licensed physician to the effect that, within twenty days of the marriage a specimen of blood has been sent to an approved laboratory for the serological diagnosis of syphilis and that the results of both tests have been transmitted to both the intended partners.

I am told that this law has never been enforced, because the Serological laboratory is not in a position to do all the required tests.

SASKATCHEWAN

151. The Saskatchewan Marriage Act, 1940, Section 58, deals with the submission of a health certificate. Such a certificate has been required of the male party as early as 1936, the examination to take place within ten days of marriage. In 1941 the Act was changed to include examination of both contracting parties and in 1945 it was again amended by making the examination necessary within thirty days of marriage.

Briefly, the legislation in force at present forbids any clergyman or marriage commissioner to solemnize marriage unless each of the parties to the intended marriage has delivered to him a health certificate signed by a duly qualified medical practitioner stating that the party concerned is *not* a mental defective, is *not* suffering from mental illness and is *not* suffering from a communicable disease which is in a communicable state. A laboratory serological test for syphilis is required.

It will be seen at once that there are two radical differences between the legislation in Saskatchewan and that is force in the other provinces. In the first place, notice is taken of all communicable disease, mental deficiency and mental illness, and in the second place, unless the contracting parties are both certified to be free from such impediments, the marriage cannot legally take place.

The provincial representative reports that there is no complaint from the profession or from the public. The fee for the service is five dollars.

DISCUSSIONS — RECOMMENDATIONS

152. Your Committee feels that the problem may be discussed under three leads.

1. Should the Association endorse the principle of compulsory premarital health examination?
2. If so, what should be the breadth of the examination so endorsed?
3. How far de we feel legislation should go in prohibiting the marriage of people who have various health impediments?

With regard to the first point, your Committee recommends that the Canadian Medical Association go on record as endorsing the principle of compulsory premarital health examination.

153. In view of the importance of mental disorders and of communicable diseases other than syphilis in relation to intended marriage, we feel that the pre-marital examination should take cognizance of all these troubles as well as of syphilis. In making this recommendation your committee is well aware of the many difficulties involved. No one who has participated in mass x-ray surveys for the detection of tuberculosis needs to be reminded of the difficulty in determining whether or not a given person has active or quiescent disease. Similarly, we all realize that the border line between "mental disease" and the many forms of psychoneurosis is hazy and ill-defined.

154. With regard to the third point we note that the aim of the compulsory pre-marital examination is to prevent in some way or other the marriage of a person from a communicable disease, usually syphilis. As we have observed in the foregoing factual discussion, different provinces rely on different "bars" or "lines of defence". As the first line of defence we have discovery of the communicable condition and the notification of the subject that the condition exists. We feel that this is a most importent and potent deterrent to the transmission of communicable disease in early marriage. In view of the present state of public education and private conscience, we think that only a very small number of people would deliberately enter into marriage knowing that they were suffering from communicable syphilis. On the other hand, in the case of mental disease, this measure is quite useless.

155. Prince Edward Island and British Columbia adopt a second line of defence warning of the intended spouse.

156. Finally Saskatchewan introduces a third line of defence, actual prohibition of the marriage in the presence of mental deficiency, mental disease and communicable disease in a communicable stage.

157. Your Committee is inclined to recommend for the present endorsation by the Association of only the first means of discouraging the marriage of persons who do not measure up to the standards of the pre-marital examination—warning of the subject. It is probable that this measure would be ninety per cent efficient and would be politically more acceptable. We have reason to believe that such a course would be more acceptable to the members from the Province of Quebec, where marriage is considered primarily as a sacrament rather than a civil contract.

158. On November 5, 1945, the College of Physicians and Surgeons of the Province of Quebec published a booklet entitled in translation "The pre-marital certificate". It is a complete report of a committee appointed to study this question by "La Société Médicale de Montréal". The report has never been translated into English, but the booklet in its original French version is submitted herewith. Through the executive of the Quebec Division we are requesting the College of Physians and Surgeons to have this book translated and distributed to the English speaking physicians of the province, as we feel that it is a very valuable contribution to the subject under discussion.

159. Briefly this committee of la "Société Médicale de Montréal" with the enthusiastic approbation of the Roman Catholic Church, recommends the mutual interchange of a pre-nuptial health certificate by the two persons contemplating marriage—a certificate which takes cognizance of all communicable disease, mental deficiency, mental disease and other bars to successful marriage such as genital malformations. The actual legal prohibition of any marriage, however, would not be considered.

160. If and when legislation on this subject is adopted in the Province of Quebec, your Committee feels that it would be along the lines mentioned above.

All of which is respectfully submitted.

R. VANCE WARD,
Chairman.

Approved.

MEETING OF SPECIAL COMMITTEE *re* PRACTITIONERS

Meeting of a Special Committee appointed by the Executive of the Canadian Medical Association to explore the possibility of stimulating clinical research among the general practitioners of Medicine in Canada.

A meeting of this Committee was held in the Library of the Medical-Dental Building, Vancouver, B.C., at 8.00 p.m. on March 28, 1947.

Chairman: Dr. Wallace Wilson. Present: Drs. J. W. Shier, H. Rocke Robertson, A. W. Bagnall.

At the Chairman's suggestion, Dr. Bagnall acted as Secretary.

Dr. Robertson moved, Dr. Shier seconded, that this Committee should strongly recommend to the Executive of the Canadian Medical Association that the C.M.A. should take steps to provide a program designed to stimulate clinical research by the general practitioners of Canada. Carried.

It was moved by Dr. Shier, seconded by Dr. Bagnall, that the following suggestions be made to the Executive of the C.M.A. in regard to setting up the machinery for implementation of such a program.

1. That a Central Special Committee be appointed to be responsible for formulating, publicizing and co-ordinating the program on a Dominion basis.
2. That a Special Sub-committee be appointed in each Division with the purpose of carrying the principles decided on by the Central Committee directly to the general practitioners in each Division.
3. That the Divisional Sub-committees should, whenever possible, also be responsible for providing reference material in respect to a piece of clinical research when requested by a general practitioner in their Division.

Carried.

Moved by Dr. Robertson, seconded by Dr. Shier, that the following suggestions be made to the Executive of the C.M.A. in regard to possible methods of stimulating clinical research and a high standard of practice among the general practitioners of Canada.

1. That in each Division a monthly competition should be held for the selection by the Divisional Sub-committee of the two best Case Reports which would then be forwarded to the Central Committee for the selection monthly of the two best Case Reports in the Dominion. The latter could be published in the *Canadian Medical Association Journal* and the prize could be either a book or subscription to a recognized medical journal.
2. That in each Division, the Sub-committee should annually hold a competition for selection of the best piece of planned clinical research on a series of cases done by a general practitioner in a rural and in an urban community. These two reports on clinical research from each Division would then be forwarded to the Central Committee for the selection annually of the best piece of Clinical Research done in (*a*) a rural and (*b*) an urban community in the Dominion. As a further stimulus, the Divisional winners could be asked to give their reports at the Annual Divisional Medical Meeting and the National winners at the Annual Meeting of the C.M.A., preferably with travelling expenses included as a prize.

Carried.

Moved by Dr. Bagnall, seconded by Dr. Robertson, that it be suggested to the Executive of the C.M.A. that the following might be approached for financial and other assistance in carrying out this program.

1. Life insurance companies.
2. Pharmaceutical houses.
3. Provincial and National Department of Public Health.

It was later suggested that some plan might be devised for the grading of general practitioners, such as an authoritative certificate or diploma, granted by an institution of learning or the Royal College of Physicians and Surgeons of Canada. The following requirements for this certificate were suggested:

1. To have served at least ten years in general practice.
2. To have attended during these ten years at least four short refresher courses.
3. To submit during the course of these ten years an original paper dealing with a detailed study of some particular ailment extending in his practice over a period of say three years, and to include the social effect.
4. At the end of ten years, having complied with the above, an examination should be held, possibl not written but extensive in the practical and oral sense, to demonstrate his ability in the three major sciences of medicine, surgery and obstetrics.

This whole matter will be given further consideration at the next meeting of the Executive Committee. In the meantime, steps will be taken to explore possible sources of funds for the proposed plan.

RADIO INTERFERENCE

Many doctors have in their offices short wave therapeutic machines. Advice has come from the Controller of Radio, Department of Transport, Ottawa, that all radio interference from medico-therapeutic equipment must be suppressed by the end of this year. This will involve a considerable expenditure on the part of doctors having short wave therapeutic machines. In the United States the Federal Bureau of Communications has issued a public circular to the effect that short wave diathermy machines may continue to be used for a period of five years in respect to equipment purchased prior to July 1, 1947, provided that no interference is caused to an authorized radio service.

The following resolution was approved by the Executive Committee:

> Whereas regulations of the Radio Division of the Department of Transport affecting therapeutic equipment require that all short wave diathermy and similar machines now being used shall be shielded or wave-length stabilized after January 1, 1948; and
>
> whereas this is being ordered to diminish the interference which these machines cause in radio reception in sea and air navigation and in other radio communication; and
>
> whereas such interference does take place throughout a large radius extending many hundreds of miles from the machine giving rise to the disturbance; and
>
> whereas the operation of such uncontrolled machines in the bordering United States would render the controlling of machines in Canada for the purposes outlined largely ineffective; and

whereas the use of such machines in the United States will be permitted for five years provided that the individual machine is not proved to cause interference to an authorized radio service and will undoubtedly be used in vast numbers within relatively short distances from our southern border and so affect radio reception throughout all the inhabited area of our country; and

whereas the proposed regulations in Canada will be, as outlined above, very ineffective, involving a serious effect on therapeutic activity affecting a great portion of our population and a very considerable financial burden on a large number of medical practitioners to no considerable purpose; therefore be it resolved that it is pre-eminently desirable that parallel regulations exist in the two countries and that no burden be placed on any group in our population unless such parallel regulations are brought about; and

further, be it resolved that regulations governing the operation of such therapeutic machines in this country be relaxed to come into line with those governing the great number of such machines whose effects are felt in our country.

OFFICERS

The following are the officers of the Association for the ensuing year:

Immediate Past President—Dr. Wallace Wilson, Vancouver.

President—Dr. F. G. McGuinness, Winnipeg.

President-Elect—Dr. William Magner, Toronto.

Chairman of General Council and of the Executive Committee—Dr. Harris McPhedran, Toronto.

Honorary Treasurer and Managing Editor—Dr. D. Sclater Lewis, Montreal.

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Assistant Secretary—Dr. A. D. Kelly, Toronto.

Editor—Dr. H. E. MacDermot, Montreal.

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Alternate—Dr. F. T. Campbell, Calgary.

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All of which is respectfully submitted,

T. C. ROUTLEY,
General Secretary.